

For Reference

NOT TO BE TAKEN FROM THIS ROOM

For Reference

NOT TO BE TAKEN FROM THIS ROOM

Ex LIBRIS
UNIVERSITATIS
ALBERTAENSIS





Digitized by the Internet Archive
in 2019 with funding from
University of Alberta Libraries

<https://archive.org/details/Tallon1965>

THE UNIVERSITY OF ALBERTA

THE CONCEPT OF INFERENCE

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARTS

DEPARTMENT OF PHILOSOPHY

by

LIAM TALLON

EDMONTON, ALBERTA

AUGUST, 1965

UNIVERSITY OF ALBERTA
FACULTY OF GRADUATE STUDIES

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled The Concept of Inference, submitted by Liam Tallon in partial fulfilment of the requirements for the degree of Master of Arts.

Abstract

This thesis is an attempt to set up a pre-logical model of inference to take into account those features of inferences which they possess in virtue of their actual usage. It is intended to combat a view often assumed by philosophers that the concept of inference can be explicated adequately in terms of a formal system of logic. My argument is that such explication is misconceived; that the relationship between epistemic (pre-logical) inference and the inference of formal logic is extremely tenuous; and that our epistemic inference is basic to all reasoning.

Chapter 1 includes a general introduction to the problem, as well as a short list of the dictionary definitions of those concepts taken to be central to the enquiry. Chapter 2 explores the nature of inference and its cognates. The results of this exploration lead to the setting up of a pre-logical model of inference in Chapter 3. In Chapter 4 an account is given of the nature of inference-licence; and in Chapter 5 the relationship between inference and inference-licence is worked out. Finally, in Chapter 6, our epistemic or pre-logical inference is contrasted with inference in a formal logical system (the sentential calculus of logic), but only sufficiently to demonstrate that they are quite distinct and that epistemic inference is the basic form of all inference. Chapter 7 is the conclusion of the thesis.

Acknowledgement

It is with great pleasure that I avail myself of this opportunity to record my appreciation of the stimulation, assistance and encouragement that my Supervisor, Professor Richard Bosley, has given me both prior to and during the writing of this thesis. But for the excellence of his advice and for his enthusiasm for the subject, I doubt that the thesis could have been written in anything like its present form. Nevertheless I should also make it clear that the errors that undoubtedly remain and the views expressed in it are my own responsibility and are in no sense attributable to him.

Table of Contents

<u>Chapter One</u> - Introduction	1
1.1 The problem	1
1.2 Dictionary Definitions.	4
<u>Chapter Two</u> - The Concept of Inference	16
2.1 Inference, the noun and the verb, and its relatives . . .	16
2.2 The persons of Infer.	23
2.3 The tenses of Infer	26
2.4 The analysis of Infer	28
2.41 Features peculiar to Infer.	28
2.42 Is it an action verb? or Is it an achievement verb?	30
2.43 Is it a dispositional verb?	33
2.44 Has it a parenthetical use?	34
2.45 Is it a performative verb?	36
2.46 Is it an epistemic verb?.	39
2.47 Summary of the features of the verb Infer	42
2.5 General Summary	43
<u>Chapter Three</u> - The Inference-Formula.	45
3.1 The inference-formula	45
3.2 The criteria of reasonableness of an inference.	48
3.21 Primary criteria.	48
3.22 Secondary criteria.	49
3.23 Some conclusions about the inference-formula. . . .	52
3.3 The basis 'p' and the conclusion 'q' of an inference. . .	53
3.31 The nature of the basis, 'p'.	53
3.32 The nature of the conclusion, 'q'	54
3.33 The nature of the inference 'I infer q, because of p'.	56
3.4 Strong and Weak inference	56

3.5	The rejection of an inference	58
3.51	The notion of 'a reason'.	58
3.52	The notion of 'reasonable'.	59
3.53	The notion of the 'validity' of an inference. . . .	60
3.54	The rejection of an inference, in terms of reason- ableness.	64
3.55	The rejection of an inference, in terms of its 'validity'.	68
3.56	General conclusion: the rejection of an inference.	70
3.6	Some remarks in conclusion.	71
<u>Chapter Four</u> - The Concept of Inference-Licence.		73
4.1	The nature of the p's and q's in an inference, i.e. in 'I infer q on the basis of p'	73
4.2	The Rylean account of inference-licence	75
4.3	Development of the Rylean Account	82
4.31	Are hypotheticals statements?	82
4.32	An ill-chosen example of an inference-licence . . .	83
4.33	The forms an inference-licence may take	85
4.34	The 'statement of' versus the 'justification of' an inference-licence	87
4.35	The character of the verb 'to license (an inference)'	90
4.36	The 'commitment-recommendation' versus the 'state- mental' sense of inference-licence.	91
4.37	In conclusion	92
4.4	The rejection of an inference-licence	94
4.41	The rejection of a licence, in terms of its 'reason- ableness'	94
4.42	The rejection of a licence, in terms of its 'valid- ity'.	95
4.5	General conclusion.	96

<u>Chapter Five</u> - The Relationship between Inference and Inference-Licence	98
5.1 Inference and Inference-Licence	98
5.11 The rejection of both Strong and Weak inferences	98
5.12 The rejection of both Strong and Weak inference-licences.	99
5.13 The invalidation of a Strong inference.	99
5.14 The invalidation of a Weak inference.	99
5.15 The invalidation of a Strong inference-licence.	100
5.16 The invalidation of a Weak inference-licence.	100
5.2 Summary of the Relationship between Inference & Inference-Licence.	100
5.3 Discussion of Several Views	103
5.31 'Ad hoc' hypotheticals versus 'variable' hypotheticals	103
5.32 The compatibility of 'p, so q' and 'not-q'.	105
5.33 An account of inference and inference-licence	107
5.4 General Conclusion.	109
<u>Chapter Six</u> - Epistemic versus Formal Logical Inference.	110
6.1 Introduction.	110
6.2 The rudiments of the sentential calculus.	110
6.3 A rule of inference and its instantiation	114
6.4 Is $((p \ \& \ (p \ * \ q)) \ * \ q)$ a pattern of epistemic inference?	115
6.41 Is $((p \ \& \ (p \ * \ q)) \ * \ q)$ a reasonable inference?	117
6.42 Is $((p \ \& \ (p \ * \ q)) \ * \ q)$ a valid inference?	117
6.5 Is R1 "If p is asserted and if $(p \ * \ q)$ is asserted, infer q" an epistemic inference-licence?	118
6.6 Conclusion.	119
<u>Chapter Seven</u> - Conclusion	121
<u>Bibliography</u>	123

Chapter One

Introduction

In this introductory chapter of the thesis we shall do two things: (a) give a brief account of the problem to be resolved, and (b), as a firm basis on which to set about this resolution, provide a short list of dictionary definitions, equivalences and examples of those concepts which, it will be argued later, are central to any discussion of the nature of inference.

Section 1.1 The problem

This thesis is designed, as an exercise in epistemology, to demonstrate that the inference of our everyday argumentation is not, and cannot be, the inference of formal logic. No doubt this claim will appear to be completely unjustified. Surely we know already that there are the two time-honoured species of logical inference, deductive inference and inductive inference? How could there possibly be a third and rival species? In other words, we shall have to explain ourselves.

Men argued, put forward theories, tried to convince one another, and so forth, long before philosophers ever got round to formalizing their inferences, arguments, explanations, and so on. Indeed any formal logic is able to get under way only on the assumption that there are inferences, arguments, etc. to be formalized in the first place. Hence, it is not that formal logic determines what is possible for right reasoning in the language, but

that the language is what determines what is possible in logic. But I must add a qualification at this point: so far as logic is totally negative in character, so far as logic systematizes for us what cannot be inferences--to that extent, and no further, it does have a normative, determining influence on our extra-logical-formal-system inferences.

Still, all of this does not sound very convincing. So we must now indicate the way in which it is necessary to go about investigating the nature of inference. And it is a remarkably simple and common-sensical way. We must, in an effort to set up an alternative epistemological model of inference, start afresh, for it would be folly to take any of the assumptions of a formal logic for granted. This will be apparent when we come to Chapter Six, in which we compare our pre-logical inference with the inference of a formal system of logic.

Then, starting at the beginning, we shall keep three things in mind for general guidance: I. We must look and see how the concept of inference works, i.e. as opposed to speculating about it, or falling back on definitions, whether logical or otherwise. 2. We must then relate inference to its cognates, and do the same for the cognates as we did for inference. 3. We must examine the function of inference and its cognates in terms of their behaviour in one type of inferential situation and another.

Forearmed in this way we shall be able to build up a model of inference on solid, sure foundations; and we shall expect such a well-grounded model to yield us in due course the nature of inference. This model will have the philosophically desirable quality of not having been defined into existence, but having been argued for, step by step, in a perfectly rational and commonsensical fashion.

What more natural, then, than for us to start with the standard dictionary in the language, The Shorter Oxford, and extract from it the definitions, etc. of inference and its various cognates, as a basis on which to examine the ramifications and interrelationships of inference and its cognates prior to considering selections of them when they are actually in use, being employed in their various standard ways.

So much by way of introduction to the problem. Having once listed the important dictionary definitions in the next section, we then move straight on to an analysis of inference in Chapter Two.

Section 1.2 Dictionary Definitions

The contents of this section consist of the listing of a selection of definitions and equivalents provided by the Shorter Oxford English Dictionary¹ which are of central importance to the notion of inference; broadly, those at the heart of that area of epistemology concerned with inferring, reasoning and argumentation generally.

I have selected and listed, perhaps arbitrarily, these concepts in this way in order (a) to provide a sound basis for the discussion of inference in Chapter Two, and (b) to give some indication of the complexity of these concepts, with their various shades of meaning, the variety of their relationships with other concepts in the area.

In this way I prepare the ground for a philosophical investigation into the nature of inference, in Chapter Three, and of inference-licence, in Chapter Four; for the argumentation of this thesis depends on getting the actual usage of these and related concepts right from the start, always keeping in mind Wittgenstein's reminder that "One cannot guess how a word functions. One has to look at its use and learn from that."² Exactly what I want to claim those philosophers mesmerised by the inference of formal logic fail to do.

Note that for the sake of simplicity I have edited the Dictionary information, omitting such incidentals as the pronunciation of words, and their historical development; and I have omitted a few archaic uses of words. The definitions which follow are set out

-
1. The Shorter Oxford English Dictionary, Third Edition Revised with Addenda, revised and edited by C.T. Onions. Oxford: The Clarendon Press, 1956.
 2. Wittgenstein, L., Philosophical Investigations, trans. G.E.M. Anscombe. Oxford: Basil Blackwell, 1953, p. 109e.

en bloc: definitions first, followed by examples illustrating their use.

Argue

- v. I. 1. To convict.
2. trans. To accuse, call in question.
3. To prove or evince; to indicate.

1. Which of you shal a. me of sinne John viii. 46.
2. Nor would we a. the definitive sentence of God
SIR T. BROWNE.
3. Not to know mee argues your selves unknown
MILT. P.L. IV. 831.

So bad a death, argues a monstrous life
2 Hen. VI, III.iii.30.

II. 1. intr. To bring forward reasons in support of
or against a proposition; to discuss; to
reason; hence, to raise objections, dispute.
Const. with, against an opponent; for, against
a proposition; of, about a matter.
2. trans. To discuss the pros and cons of; to
examine controversially.
3. To maintain, by adducing reasons, that (etc.).
4. To use as an argument (arch.).

1. His philosophy and faculty of arguing GLANVILL.

More ready to a. than to obey BACON.

Of good and evil much they argu'd then MILT.
P.L. II. 562.
2. The sayd causes warre well and sufficiently
argued.

Phrases. To a. away, off etc.: to get rid of by
argument.

To a. into or out of: to persuade by
argument into, or out of, a course of
action, etc. Hence

Arguable a. capable of being argued.

Arguer.

Arguing vbl. sb. accusation; argument.

Argument

1. Proof, token. (Passing from clear proof to proof presumptive; ARGUE 3.) (arch.)
2. Astr. and Math. The angle, arc, etc. on which the calculation of another quantity depends.
3. A statement or fact advanced to influence the mind, or to support a proposition; spec. in Logic, the middle term of a syllogism. Also fig. Const. to, for, and later against.
4. A connected series of statements intended to establish (or subvert) a position; a process of reasoning; argumentation.
5. Statement of the pros and cons of a proposition; debate; transf. subject of contention.
6. Theme, subject (arch.)
7. The summary of the subject-matter of a book; fig. the contents.

1. It is.. no great a. of her folly Much Ado II.iii.242.
2. To pleade my cause before him, and to fyll my mouth with argumentes Job xxiii.
3. The arguments for and against..trial by jury COX.
4. The successive steps of the a.
5. In a. with men a woman ever Goes by the worse MILT. Sams. 903.

Sheath'd their swords for lack of a. Hen.V, III,i.21.
6. It would be a. for a weeke I Hen.IV, II.ii.100.

He grew the A. of all Tongues CLARENDON.
7. If I would.. try the a. of hearts, by borrowing Timon II.iii.187.

Hence Argumental a. argumentative. Argumentize, to conduct an a.

Argumentation

1. The action of inferring a conclusion from propositions premised; methodical employment or presentation of arguments; formal reasoning.
2. Interchange of argument, debate.
3. = ARGUMENT 4.

1. The eloquence and a. of the bar SCOTT.
2. But what a. can a man hold with him CLARENDON.
3. What a misfashioned a. is this.

Conclusion

1. The end, close, finish, wind up (e.g. of a speech).
2. An issue, outcome.
3. Logic. A judgement arrived at by reasoning; an inference, deduction, induction; spec. the third proposition of a syllogism, deduced from the two premisses; the action of inferring (rare).
4. A proposition, dogma; a problem; an experiment.
5. Purpose, end.
6. Final determination; final agreement.
7. The concluding (of a peace, etc.)
8. Law. a binding act, an estoppel.
9. Sc. Law. The concluding clause of a Summons.

1. To drawe to a conclusyoun Of thys long tale.

The c. is a clarkely gatherynge of the matter spoken before.
2. What will be the c. of all this. Phr. Inc.:
at last; to conclude; also (formerly) in short.
3. The sober conclusions of science TYNDALL.

He granted him the major and the minor; but denied him the c. ADDISON.

Your wife Octavia, with her modest eyes, and
still C. Ant. & Cl. IV.xv.28.

4. Certayn.. conclusions towchyng women CAXTON.

She hath persue'de Conclusions infinite Of easie
wayes to dye Ant. & Cl. V.ii.358.

Phr. To try conclusions: to experiment; transf.
to engage in a trial of skill, etc. (Now assoc.
with sense 2, as if = 'to try the issue.')

5. He has come to the c. not to prosecute (mod.)
6. By the c. of treaties SEELEY.

Hypothetical a.1. Involving hypothesis; conjectural.

- b. Logic. Of a proposition: Conditional; opp. to
CATEGORICAL. Of a syllogism: Having a hypo-
thetical proposition for one of its premisses.
2. Depending on hypothesis; supposed, assumed.
3. sb. A hypothetical proposition or syllogism.

2. It would be.. impossible.. to declare.. what
would be our conduct upon any h. case WELLINGTON.

Phr. H. necessity: that kind of necessity which
exists only on the supposition that something
is or is to be.

Infer v.

1. trans. To bring on, bring about, induce, occasion,
cause, procure. b. To confer. c. To cause to be.
2. To bring in, introduce; to mention, report; to
adduce, allege.
3. To bring in or draw as a conclusion; in Logic,
To derive by deduction or induction from some-
thing known or assumed; to accept from evidence
or premisses; to conclude.
4. To lead to as a conclusion; to involve as a
consequence; to imply. (Said of a fact or
statement).

1. Inferre faire Englands peace by this Alliance SHAKS.
2. Full well hath Clifford plaid the Orator, Inferring arguments of mighty force SHAKS.
3. What I never meant Don't you i. PRIOR.

absol. To infer is to be regarded as the proper office of the Philosopher;--to prove, of the Advocate WHATELY.

4. Consider first, that Great or Bright inferrs not Excellence MILT. P.L. VIII.91.

Hence Inferable, -ible a. that may be inferred; deducible.

Inference

1. The action or process of inferring; esp. in Logic, the forming of a conclusion from premisses, either by induction or deduction; = ILLATION 1. Also (with pl.), an act of inferring; the logical form in which this is expressed.
2. That which is inferred, a conclusion drawn from data or premisses.

1. Religion is.. a matter of deduction and i. BUTLER.

In any i. we argue either to something already implied in the premisses or not; if the latter, the i. is inductive, if the former, deductive. If the deductive i. contain only a single premiss, it is immediate; if it contain two premisses, and the conclusion be drawn from these jointly, it is mediate, and is called a syllogism. FOWLER.

2. To draw inferences has been said to be the great business of life MILL.

Licence sb. Also license

1. Liberty (to do something), leave, permission. Also occas. exemption from (something)

2. A formal permission from a constituted authority to do something, e.g. to marry, preach, carry on some trade, etc.; a permit. b. The document embodying this. c. In some Univs., a certificate of competency in some faculty.
3. Liberty of action conceded or acknowledged; and instance of this. b. Excessive liberty; abuse of freedom; disregard of law or propriety. c. Licentiousness, libertinism.
4. Deviation from form or rule by a writer, an artist, etc.

1. And asked leue and lycence at londun to dwells
LANGL.

Others would confine the license of disobedience to unjust laws MILL.

2. (To marry) by l. in opposition to by banns.
Licences to dealers in spirits and wine BURKE.
3. He.. allowed great and public l. to his tongue.
b. They are for l., not for liberty SHEFFIELD.
The intolerable l. with which the newspapers break.. the rules of decorum BURKE.
c. The license of the Restoration.
4. A lycence poetycall. The poem.. allows a metrical l. KINGSLEY.

License, licence v.

1. trans. To give (a person) permission to (do something).
b. To permit (a thing) to be done; occas. with dat. of the person.
2. To give leave of departure to; to dismiss, set free from; send away to.
3. To grant (a person) a licence to do something, e.g. to practise a trade, hold a curacy, keep a dog, carry a gun, etc. Const. for, to, and to with inf. b. To grant a licence permitting (a house, theatre, etc.) to be used for a specified purpose.

4. To authorize the publication of (a book), the acting of (a play).
5. To allow liberty or scope to; to privilege, tolerate.

3. Judith Kent, widow, 'Licenced.. to vend tea, coffee, tobacco, and snuff' MISS MITFORD.
4. This play was licensed on June 6th, 1634. Hence Licensable a. Licensee, one to whom a licence is granted.

Licenser

One who licenses; esp. an official who authorizes the publication of books or papers (l. of the press), or the performance of plays (l. of plays), on being satisfied that the law, public morals, or decency are not violated.

Premise, premiss sb.

- I. In Logic. A previous proposition from which another follows as conclusion; spec. in pl. the two propositions from which the conclusion is derived in a syllogism.

Her foe's conclusions were not sound, From premisses erroneous brought SWIFT.

- II. in Law and gen. (now always premise(s))
 1. pl. The matters or thing stated or mentioned previously; the aforesaid, the foregoing.
 2. Law. (pl.) That part in the beginning of a deed or conveyance which sets forth the names of the grantor, grantee, and things granted, together with the consideration or reason of the grant.
 3. Law. (pl.) (spec. use of 1.) The subject of a conveyance or a bequest, specified in the premises of the deed; = the houses, lands, or tenements beforementioned.
 4. (pl.) A house or building with its grounds or other appurtenances.
 5. Previous circumstances or events.

1. To discuss questions conformably to the premises thus agreed on.
3. Alice Higgins devized the premises, being a term for 999 years, to trustees.
4. Nor shall any coroner's inquest be held on such licensed premises.

- Reason sb. I.
1. A statement of some fact (real or alleged) employed as an argument to justify or condemn some act, prove or disprove some assertion, idea, or belief. b. Logic. One of the premises in an argument; esp. the minor premise when placed after the conclusion.
 2. A statement, narrative, or speech; a saying, observation, or remark; an account of explanation of, or answer to, something. Also, without article, talk or discourse.
 3. A sentence. b. A motto, posy.

1. Strengthening their reasons with many examples. Phr. A woman's r.; I haue no other but a woman's r.: I thinke him so, because I thinke him so SHAKS. To give, yield, or render (a) r., to give an account (of one's acts or conduct).
- II.
1. A fact or circumstance forming, or alleged as forming, a ground or motive leading, or sufficient to lead, a person to adopt or reject some course of action or procedure, belief, etc. Const. why, wherefore, that; of, for; to with inf.
 2. A ground or cause of, or for, something: a. of a fact, procedure, or state of things in some way dependent upon human action or feeling. b. of a fact, event, or thing not dependent on human agency.
 3. Rationale, fundamental principle, basis.

1. He made a Voyage to Grand Cairo for no other R. but to take the Measure of a Pyramid ADDISON. Phr. R. of state, a purely political ground of action on the part of a ruler or government,

esp. as involving some departure from strict justice, honesty, or open dealing.

2. (a) Custom it self, without a r. for it, is an argument only to fools. (b) There is not a hair or line, not a spot or color, for which there is not a r.

Phrases. By r. of, on account of. By r. (that), for the reason that, because. There is (good, etc.) r.; also with omission of vb. To have r. for, or to do, something; also ellipt. without construction. To see r. (to do something). With or without r.

Statement

1. The action or an act of stating; the manner in which something is stated. b. Mus. A presentation of a subject or theme in a composition.
2. Something that is stated; an allegation, declaration.
3. A written or oral communication setting forth facts, arguments, demands, or the like. b. Comm. (More fully s. of account) a document setting out the items of debit and credit between two parties.
4. Comm. In certain branches of industry, a document periodically issued, setting forth the prices to be paid to workmen for various kinds of piece-work. Also attrib. as s. price, wages.

1. In s., the late Lord Holland was not successful MACAULAY.
A model of cautious and accurate s. (mod.)
2. The s., that truth is appearance only JOWETT.

Valid a.

1. Good or adequate in law; legally binding or efficacious. b. Eccl. Technically perfect or efficacious.
2. Of arguments, assertions, etc.: Well founded and applicable; sound and to the point; against which no objection can fairly be brought.
b. gen. Effective, effectual; sound.

3. Of things: Strong, powerful.
4. Of persons: Sound or robust in body; possessed of health and strength. Also said of health.

1. The nature of Justice, consisteth in keeping of v. Covenants. HOBBS. Those, who held rent-free lands by titles that might be declared v.
2. For when One's Proofs are aptly chosen; Four are as v. as four Dozen PRIOR. b. The only v. method of investigating the relation between thought and speech.
4. The Boers have evidently put every v. male into the field. Hence Validity adv. -ness.

Warrant sb. I. 1. A protector, defender.

2. A guarantor, surety (Sc.); assurance, pledge, guaranty.
3. One who is answerable for a fact or statement; an authoritative witness.
4. One whose command justifies an action.
5. Command or permission of a superior which frees the doer of an act from blame or legal responsibility; authorization, sanction. b. A token or evidence of authorization.
6. Justifying reason or ground for an action, belief, or feeling.

1. I will be thy warrand for a year and a day SCOTT.
2. Rich.II,IV. 235. To take w. on oneself, to pledge oneself.
4. Use axe and lever, Master Foster--I will be your w. SCOTT.
5. b. Fayth is willing to obey, as soon as it seeth a Warrand.
6. Good intentions are no w. for irregular actions. Phr. Of w., warranted. Out of w., unlawful, unwarranted.

- II. 1. A writing issued by the sovereign, an officer of state, or an administrative body, authorizing those to whom it is addressed to perform some act.
2. A writ or order issued by some executive authority, empowering a ministerial officer to make an arrest, a seizure, or a search, to execute a judicial sentence, etc.
3. A writing which authorizes one person to pay or deliver, and another person to receive, a sum of money.
4. A voucher, certificate.
5. A form of receipt given to a person who has deposited goods in a warehouse, by assignment of which the title to the goods is transferred.
6. Mil. and Naval. An official certificate of appointment issued to an officer of lower rank than a commissioned officer. b. Short for WARRANT OFFICER.
7. W. of attorney = letter, power of attorney.

2. There's a w. out against me, and I must fly.
General w., a w. for the apprehension of the persons suspected of an offence, no individual being named or particularly described.
Comb.: w. holder, a tradesman who has written authority to supply goods to the household of the king or a member of the royal family.

Chapter Two

The Concept of Inference

Our task in this chapter is, bearing the Dictionary definitions of Chapter One in mind for general guidance, to determine the ways in which 'infer' is used: whether its employment differs from one person to another, or from singular to plural; whether change of tense, from past through present to future, affects its employment; what type of verb it is, whether performative, dispositional or action, for instance; and to take note of any peculiarities it may have, especially those it shares with its near or distant relatives. On this basis we shall be able to determine how inference-licences and hypothetical statements, of the form 'if p, then q', function in their turn; for, as we shall see, these concepts are in need of clarification.

Section 2.1 Inference, the noun and the verb, and its relatives

This section is essentially a simple account of inference and of its related forms, for by means of the examination of a few typical sentences employing it in either the noun or verbal form, we shall see that it is impossible to understand inference properly independently of its close relatives. We shall see, by this means, that the analysis of inference must be a matter of determining the function of both it and its relatives, rather than fastening on to any particular concept (e.g. infer or deduce) in the inference range.

Let us now consider a few sentences in which inference is typically employed, either in the noun or verbal form, as a means to demon-

strating how naturally, generally speaking, inference can be replaced without loss of sense by some relative, either a verb or a noun. Take the following selection:

1. 'The detective inferred that the gamekeeper was the culprit'
2. 'The inference was that the child was innocent'
3. 'I infer that you were late this morning'
4. 'I infer your guilt because of the bloodstains on your shirt'
5. 'Despite your protestations of innocence, I infer that you are the murderer'

The above examples illustrate typical employments of infer, the verb, and inference, the noun. Let us now set about substituting another verb for infer, or rephrasing the sentence with or without so substituting, but without altering the meaning of the original sentence.

Take example 3, for instance. Here several substitutions are immediately obvious; for instance, deduce or conclude, as in 'I conclude that you were late this morning'. We can also, alternatively to substituting a verb for infer, employ so, then or therefore followed by a suitable sentence; for example, 'So you were late this morning' or (but here there is a slight alteration in meaning, though the function is the same) 'So you must have been late this morning'; and it is not unnatural to use a sentence of the form 'Therefore, I infer you were late this morning', though, apart from emphasizing the lateness, the use of either therefore

or infer renders the other redundant.

But the following, though, are not quite equivalent, even if in certain circumstances--to be determined by the linguistic context in which they occur--they can and do perform the function of infer. Diagnose, for instance, is on all fours with infer, except that its use is confined to medicine usually; for instance, in the sentence 'I diagnose your complaint as lumbago', its function is that of infer; just as 'My diagnosis is such-and-such' and 'My conclusion is that such-and-such' are oblique ways of phrasing the normal first person use .

Prove has a similar, closely related function, as in 'Such-and-such proves you were there', but here the inference drawn is implicit; when prove is used both what is inferred and the ground of the inference are made explicit. What we have to be clear about is that an inference is being drawn here, although the equivalence is with the noun inference rather than the verb infer. 'Such-and-such proves you were there' is equivalent (only for inferential purposes, note) to 'Because of such-and-such, the inference is that you were there'.

Some other inference-equivalents are: argue that, assert that, maintain that, hold that, claim that, judge that and reason that; as in 'I judge you to be guilty', 'I reason that Jack could not have done it' and 'He asserted that Granny must have eaten it'. It is important to note, whilst we are on the subject of assert, that normally people making assertions do not at the same time 'flag' their assertions with 'I assert...', but simply assert whatever they

have in mind; e.g. 'Granny did it', assuming of course a suitable context, one in which the assertor has drawn the appropriate inference. In that case 'Granny did it' is equivalent to 'I infer that Granny did it', 'The inference is that Granny did it' or 'I conclude it was Granny'. In passing, note that the phrase 'So-and-so asserted that...' belongs to reported speech, whereas the actual assertion belongs to direct speech.

Nevertheless, I want to make it quite clear that I am not claiming that the cognate forms of infer listed above are equivalent in all respects to infer; merely that they function, as it does, inferentially. They have other uses, but they are not relevant to our purpose. It must be stressed here that this list is intended to be no more than a sampling of the possible cognates of infer. Our sampling is just sufficient to enable us to make the point that, with minimal linguistic adjustment, a variety of verbs and nouns is capable of doing the job of infer and inference.

Example 4, unlike 3, makes explicit the ground of the inference being drawn, i.e. 'I infer your guilt because of the bloodstains on your shirt'. In other words, it is not essential to an inference that the ground be cited, though whether there must be one is another matter, and one which we shall come to discuss in Chapter Three. In example 3, on the other hand, no mention is made of any ground: 'I infer that you were late this morning'.

In example 2, 'The inference was that the child was innocent', it would be perfectly natural to substitute, without loss of sense, implication for inference. But, interestingly enough, it does not follow that because a noun-substitution is possible a verb-substitu-

tion will follow automatically, for inferring and implying are not equivalent. In example 3, 'I infer that you were late this morning' the substitute imply won't work. The explanation is that one never implies anything directly. Hence, since imply has no direct use, whereas infer has, the substitution is ruled out in example 3, and in any other sentences like it. An oddity to be noted in this connexion is the use of infer when imply is more natural: 'What are you implying?' is sometimes put 'What are you inferring?' Clearly imply is the correct verb here, even though at least one U.S. President is reported to have claimed to be unable to tell the difference. Cf. Keene's discussion of the subject.¹

A word or two more about certain of these substitutes for infer or inference. So, then and therefore are used normally to flag a conclusion, the drawing of an inference, the concluding that such-and-such; in this sense they are interchangeable. Their function in a sentence is quite uncomplicated, for they signal that what follows them is what is being put forward, and what precedes them is the basis on which the inference is being drawn. That is not to say that there are not other uses for these words; there are various different ones, but when they function in the way indicated their use is clearly and unambiguously inferential.

Argue and reason are ambiguous in their usage. In the sentences, 'I don't want to argue with you, but...' and 'My reason for maintaining that...', they are not being employed inferentially. But in the forms 'I argue that...' and 'I reason that...' they are, because they are equivalent to 'I infer that...'. Similarly with

1. Keene, G.B., Language and Reasoning, London: Van Nostrand, 1961, p.5.

claim, maintain and judge. Judge and claim, for instance, are very close to infer because to judge that such-and-such or to claim that so-and-so implicitly involves a ground or grounds on which the judgment or claim is made; but though this need not be so, we are interested in the cases in which a ground is involved.

Some further relatives of infer, those whose relationship is not so close, are guess, estimate, suppose and to be convinced that; for these, unlike deduce, infer and conclude, are ambiguous, perhaps more ambiguous than e.g. argue, judge, claim and maintain. For example, 'I guess he did it' may be no more than a loose way of saying 'I infer he did it', but it might also be a sort of tentative inference; in most cases the context will make this clear. It might also be quite different, as in 'I guess there are 146 marbles in the drum', when a blind guess is involved, implying therefore that no inference could be involved. Estimate, too, is ambiguous. In 'He estimated that it must be a species of duck' (done on the basis of its shape, colour, outline, and his knowledge of ducks, etc.) it would appear to be like inferred in function. But in 'I estimate it weighs two tons', when no weighing is involved, it might be equivalent to a wild guess of some sort. The latter sense (the guess sense) of estimate is not based on any ground, where the former sense (the infer sense) involves a ground whether explicitly or implicitly.

Suppose suggests an element of doubt; one could regard its employment in the following sentence as a sort of weak or doubtful inference: 'I suppose the cat must have stolen the fish'. Note here

that the 'must' in the sentence has the function of stressing the doubtfulness of the inference; indeed the doubtfulness of the inference determines that one of the weaker inference-verbs is in order, i.e. as opposed to infer, deduce or conclude, the strong inference-verbs. Finally, in this group, what about to be convinced that? This expression is ambiguous in that it functions inferentially in some cases but not in others. Where the evidence is made explicit, or is taken for granted by all concerned, and it appears to point to him, as in 'I am convinced that Jack takes drugs', it is inferential; but it appears that in such a case the evidence would not reach overwhelming proportions, or we should without hesitation substitute infer, or one of its strong equivalents, for be convinced that.

The verb believe is very close in meaning to infer. In 'I believe him to be the murderer' one could substitute infer for believe, assuming that there was little doubt about the fact, and that one had evidence to back up the assertion 'I believe...'. This sense of believe functions as does infer though, I suggest, there is often an element of doubt about any inference drawn via the verb believe, because 'I believe' implies the possibility of my having been mistaken. It is important to note, in this connexion, that one cannot know such-and-such and infer it. For to infer is to come to know. Similarly with believe. In drawing the inference I come to believe; I can't have believed already, or my use of 'I believe him to be the murderer' amounts to being something in the nature of a reminding myself of the initial inferring, whenever that took place. An interesting feature of infer is the following:

one can say 'I believe he is innocent despite the evidence' in a way one cannot say 'I infer he is innocent despite the evidence', for one infers whatever one does infer because of the evidence. Then in that respect, at least, believe and infer are not alike.

To conclude these remarks about inference and its cognate forms: it is clear that what is important about infer is its function, for this can be picked out in a variety of ways, as has been indicated. In other words, we must not concentrate exclusively on infer, conclude or deduce, or any other individual verb, but on the function of infer and its many equivalent inferential-verbs. For this reason it seems clear that we must concentrate on the verbal form of infer and its cognates, and not on the noun form and its cognates. Nor must we be surprised to learn that there is nothing logically central about infer as opposed, say, to deduce or conclude or any of their cognates; or even that there are various ways of inferring without ever employing any inferential-verb at all. We must focus our attention on the activity, on what is going on, rather than on the form of words used.

Section 2.2 The persons of Infer

We must next explore the differences in the uses of the first, second and third persons, singular and plural, of infer and mutatis mutandis of inferential-verbs generally. Let us take the following as our example, 'I infer it is a goldfinch', and set it out schematically as follows:

I infer it is a goldfinch We infer it is a goldfinch
You infer it is a goldfinch You infer it is a goldfinch
He infers it is a goldfinch They infer it is a goldfinch

Let us now consider these uses in order. But before doing so, we would do well to remind ourselves that when one knows something, it is impossible also to infer it, as, for instance, in 'I infer that I was late this morning', when as a matter of fact I know perfectly well I was late. One has, so to speak, to be in a state of ignorance to infer anything. Then, once the evidence, the wealth of evidence is presented to one, one, as it were, cannot help but conclude such-and-such. One can only infer what one previously had not known. That is why one can infer things about oneself, as, for instance, 'I infer that I am ill (though I feel fine), because of the greenish colour of my skin'; but not 'I infer that I am Liam Tallon', because I know I am.

The first person singular use 'I infer it is a goldfinch' is perfectly straightforward and indeed is the basic use of infer. It is in this usage that inferences are actually drawn: people draw inferences, and here I draw one.

The second person singular use is another matter, for it is not straightforward and requires comment. We don't, as a matter of fact, employ this use of infer at all, except in a particular and not very important way. It is as though we restrict this usage to expressing surprise at, to doubting, or to ridiculing the inference which the person we are addressing has drawn, as in 'You infer that the gamekeeper did it, do you?' or, in astonished tones, 'You infer

that the gamekeeper did it!' where the 'do you?' is lurking not very far away. We just don't state 'You infer such-and-such' in the same matter of fact way we state 'I infer such-and-such' or 'He inferred such-and-such'. In short, to the extent that there is a natural second person singular use of infer, it has the function of casting doubt on, scorning, or ridiculing the inference one's interlocutor has drawn.

The third person singular use is 'reportative', one might say, because it is in effect a report of another person's inference. But it, too, is somewhat artificial. For instance, 'He infers it is a goldfinch' is more than likely to be used when the implication is that he ought not to have so inferred, or to indicate one's surprise that he inferred that it was. This artificiality is absent in the case of the past tense of infer; but we shall come to that in due course. 'He thinks it is a goldfinch' or 'He supposes it to be a goldfinch', on the other hand, are natural enough, though in that use they are not operating inferentially, it seems to me. So that both the second and third person uses of infer signal an element of doubt of some kind.

What can be said about the first, second and third persons singular can also be said about the first, second and third persons plural of infer, except to note that the plural forms are 'editorial' in character. We may, therefore, neglect to consider them here, for their employment can be explicated in terms of their singular equivalents. For instance, the King might say with perfect propriety 'We infer that it is a goldfinch', which has the import, neither

more nor less, of the first person singular use.

We can now conclude that the central and most important employment of infer and its cognates is that of the first person singular, which is the only case in which an inference is actually drawn. In all the other cases something else is being done, though an inferential verb is being employed to do it. It is also clear why we must concentrate on the verbal and not the noun use of inferential verbs, for the noun form belongs naturally to predicting or reporting, as opposed to inferring.

Section 2.3 The tenses of Infer

'Infer' is something of a verbal curiosity, in that its past, present and future tenses all function differently. Let us consider them in turn.

Present Tense This clearly is the tense in which we are most interested, since it is the only one in which people actually infer. In no other tense is this the case. But the future tense, for instance, can figure in an inference, as in 'I infer that it will rain tomorrow'; similarly with the past tense. The thing to remember is that shifts of tense, whenever they occur, must occur within the inference, so to speak. Suppose I say 'I shall infer it is a cactus tomorrow'. Clearly this cannot be an inference, for I have not drawn it yet. It is a prediction. Similarly with the past tense, which is reportative in function.

Future Tense Inferences in the future tense are predictions. As

was indicated above, 'I shall infer such-and-such' functions predictively. It should be noted that there is something artificial about the future tense of infer, even allowing that it is predictive. Better perhaps 'When all the statistical data has been processed, I shall be in a position to determine whether it is a such-and-such or a so-and-so'. But in that case there is no temptation to think of the sentence as carrying an inference. The point is that the drawing of an inference is temporally coincident with the inference drawn. It cannot be otherwise. And such examples as 'I infer that Napoleon was very vain' do nothing to weaken the claim, for the 'Napoleon was very vain' clause, though in the past tense, is asserted at the same time that the inference is drawn.

Past Tense Inferences in the past tense are reports. In 'I inferred that it was the Aurora Borealis' clearly I am reporting an inference drawn at some time in the past. Note that both inferred and was were used, as it were linguistically reinforcing the point that the inferring and what is inferred must be temporally coincident.

In conclusion, it is clear that only in the present tense can inferences be drawn. The future is predictive, and the past is reportative. We must now keep these conclusions in mind in our endeavour to determine what sort of verb infer is. And henceforth we shall concentrate exclusively on the verbal form of infer, in its first person singular use, and mutatis mutandis with its cognates.

Section 2.4 The analysis of Infer

In this section I propose to consider the verb infer, as representative of inferential verbs, as a candidate for adoption into some of the categories of verbs that philosophers have put forward from time to time. Among such categories are: achievement verbs, performatives and dispositional verbs. In this way we shall be able to get a clearer picture of the essential nature of infer as a basis on which determine the exact nature of inference.

2.41 Features peculiar to Infer

The verb 'infer' has no present continuous form, as in 'Don't bother me, I'm inferring' or 'It took him long enough to finish inferring that his brother had left home'. But of the two examples the second is to be preferred to the first, for it does not make sense for anyone to be just inferring: one has to infer something, which, so far as an inference is concerned must be stated or, at the very least implied. The uses of the verb 'infer' just illustrated are illegitimate, because it does not make sense to pose questions such as 'How long did it take you to infer so-and-so?' or to ejaculate 'My, that was a long inference!' or to ask 'When did you start inferring that such-and-such?' or 'When did you stop inferring...?' Hardly surprisingly, such replies to these last two questions as 'I started at midday' and 'I stopped at 7.45 p.m.' underline their absurdity.

Even so, why should there be no present continuous to infer? One reason is that to say 'I infer...' is to commit oneself to something,

viz. the clause that follows the phrase; and it does not make sense to ask 'How long did it take you to commit yourself to such-and-such?' Infer is used, at least in part, in the way a judge delivers a verdict, as, for instance, in 'I pronounce you guilty of the crime of...'. It functions, in other words, as a variety of performative, to use Austin's term. Consequently, it makes no sense to interpret an inferring as an event that can be dated, timed, and so on. Instead of saying 'I am inferring that...' one says something like 'I am trying to determine....', i.e. with the end in view of getting oneself into a position in which one can infer that such-and-such. But the verb 'infer' has no place in deliberations of that kind; and that is why we don't use it in that way. One can use 'I infer...' with propriety only when one is in the happy position of having both the ground of the inference at one's disposal, and of recognising that it is the ground and being aware of its relevance to the inference in question.

Another reason why infer cannot have a present continuous is that until all the wondering, doubting, deciding etc. is over, one cannot infer anything: the fact that one infers, concludes, thinks, etc. implies that all the preliminary cogitation is over, so to speak. Hence, infer cannot have a present continuous.

Infer must be a transitive verb. That this is so has become apparent because of our discussion of the fact that it has no present continuous form: we argued then that one simply cannot infer in vacuo, but that one must infer something. Such phrases as 'So I inferred, too!' do not weaken the argument, for they are

in fact nothing other than elliptical forms of longer, more explicit sentences, such as, 'I, too, inferred that such-and-such'.

2.42 Is it an action verb? or Is it an achievement verb?

There are two sorts of action verbs, viz. physical and mental. Examples of the physical would be walk, smoke, sing and write; examples of the mental would be think about, imagine and calculate. Clearly, then, infer does not belong to the category of physical action verbs, since limbs, eyes, ears and muscles are not employed in inferring anything. So that if infer is an action verb at all, it must be a mental action verb. As Professor Ryle puts it:

An argument is used, or a conclusion drawn (we might add: an inference is drawn, or one infers), when a person says or writes, for private or public consumption, 'this, so that', or 'because this, therefore that' or 'this involves that', provided that he says or writes it knowing that he is licensed to do so. This saying or writing in this frame of mind is, of course, a mental, indeed an intellectual act, since it is an exercise of one of those competences which are properly ranked as 'intellectual'. But this is not to say that it is a 'mental act' in the sense that it is performed behind the scenes.²

If Ryle is right, then, inferring is not some sort of mysterious mental act, though certainly it is mental or intellectual enough: it is for him an intellectual competence or skill. It is not an act at all, since it makes no sense to talk of doing it slowly or rapidly--surely appropriate predicates to apply to infer if it were indeed a mental act of any kind. Think of calculate (in the sense of 'doing sums') by contrast. Thus far I see no reason for

2. Ryle, G., The Concept of Mind (Hutchinson's University Library), London: Hutchinson House, 1955, p. 301.

disagreeing with Ryle, at least on that point. But Ryle goes on to argue:

'Conclude', 'deduce' and 'prove', like 'checkmate', 'score', 'invent' and 'arrive', are, in their primary uses--the ones with which we are concerned here--what I have called 'got it' verbs....³

Now it seems to me that Ryle's labelling of infer as an achievement verb (i.e. a 'got it' verb) is both right and wrong. It is right in that in some circumstances 'I infer it was the butler', for example, is shouted out triumphantly by the inferrer who has achieved his purpose: he has been trying for some time to work out whether it was the chambermaid, the gamekeeper or the butler, and at last he realises it is the butler, i.e. at last he is able to infer so. In that sense, as in the case when one player in the game of chess shouts 'Checkmate!', infer is achievemental. But it seems to me that this is but one aspect of inferential verbs, and a not very important one at that.

I want to argue that the important aspect of inferential verbs is their non-achievemental aspect. When, in appropriate circumstances, I say 'I infer that the gamekeeper killed the squire', the main force of the infer is to let my hearers know that I have committed myself in some way to the assertion 'The gamekeeper killed the squire'. And, as I see it, to commit oneself is not achievemental in character. If it were, one would talk of trying again and again to commit oneself, or to infer that such-and-such, and in the end of succeeding in doing so, or in failing to do so. But that sort of

3. Ibid., p. 302.

account seems foreign to verbs like infer, since it makes perfectly good sense to talk of inferring that such-and-such without any trying to do so at all; without making an effort in any sense of the word.

For such reasons I would claim that infer in its important first person singular verbal use is not achievemental, nor, of course an action verb either. Take the following sentence by way of illustration: 'It took me days before I was able to conclude that the butler stole the silver'. The phrase 'before I was able' is significant here, for it suggests that it is only after all the trying is over and done with that one is able to infer or conclude anything. It is not that the inference is the 'summit of the achievement', so to speak, but that it has no place in the business at all, except perhaps in the secondary or derivative sense of signalling an achievement (though of another kind) as indicated above, i.e. the sense which Ryle assumes to be central to verbs like infer, conclude and deduce. As Ryle has it:

When a person uses these verbs in the timeless present tense, as in 'I conclude', 'he deduces' or 'we prove', he is using them in a sense derivative from their primary sense. They do not directly report⁴ gettings, but something nearer akin to possession.

Ryle is right in distinguishing between the achievemental and the 'possessive' (cf. above quotation) aspects of infer; but I take him to be mistaken in supposing the former to be the primary use, and the latter the secondary. For the exact opposite is the case. But

4. Ibid., p. 303.

that this is so will become clearer as we proceed with the next two chapters.

The conclusion is that (a) infer is not an action verb, and (b) neither, except perhaps in a secondary sense, of relative unimportance, is it an achievement verb.

2.43 Is it a dispositional verb?

A dispositional verb is one that picks out a habit or a tendency in a person. Examples are to take snuff, to smoke a pipe, to be prone to gout and to be a late riser. If I take snuff, for instance, that does not mean that I take it perpetually, but that on such-and-such occasions I am liable to take a pinch of it. But whether infer, as representative of inferential verbs, is dispositional is not quite so straightforward, for I can think of one sense in which it is, and another in which it is not.

When used to handling objects in a particular field, for instance, I am dispositionally inclined to succeed in my operations with them; but when unused to the field in which the objects are to be manipulated I am not. For instance, I am very good at tying knots, but I am hopeless at fine crochet work. In the former case I am, so to speak, able to make the appropriate manipulations blindfold; in the latter case I am able to get the pattern right only after much hesitation and after making a variety of mistakes. To take a more naturally inferential case: if I am very good at diagnosing illnesses, no doubt my diagnoses are on the whole both rapid and correct. In that case my inferring (diagnosing) is, in a sense,

dispositional: I am in the habit of reasoning thus and thus in the course of my work, and I can do it almost without thinking.

But in the case, say, in which after a long period of time I discover that my tutor instead of helping me to pass my examinations is trying to ensure that I fail them, the drawing of that inference comes to me as a shock--as indeed it ought to do, for this is the sort of inference I am not in the least used to drawing. In that case, therefore, there is nothing dispositional about the inference.

There is, though, another sense of 'dispositional' which is very relevant to inference, viz. the sense in which when one draws an inference one commits oneself to drawing similar inferences in the future, on pain of inconsistency. If I draw an inference 'q because of p', say, and I am not prepared to commit myself to other inferences of that sort, then either I ought not to have drawn the inference in the first place or I am being illogical in drawing the inference now but refusing to do so in the future. And that sense of 'dispositional' is important to our thesis.

Hence I take it that except in the empty sense of committing oneself to drawing inferences of the same type on future occasions, inference is not a dispositional verb, though one can indeed get into the habit of making certain sorts of inferences correctly, swiftly and with ease. But in its most important sense, infer is not a dispositional verb.

2.44 Has it a parenthetical use?

Roughly speaking, a parenthetical verb is one which is susceptible

of being shifted about the sentence in which it appears, but without suffering any change of sense in the process. Take believe, for instance, in the following sentences: 'I believe he is waiting below', 'He is, I believe, waiting below' and 'He is waiting below, I believe'. As Mr. J.O. Urmson points out in his article Parenthetical Verbs⁵, in the case of believe the first and third person usages function differently: 'I believe he is waiting below' is different from 'He believes it is snowing without'. The 'believe' in the former example is susceptible of parenthetical shifting, whereas the 'believes' in the latter is not.

The reason this is so is that the function of the two sentences, and a fortiori the first and third person uses of believe are different: the third person use involves reporting something about the believer; the first person use has a 'performative' (cf. 2.45) function, in that not only does it not report anything about the speaker (though it implies things about him: quite another matter) but it, as it were, picks out his attitude towards the object of his belief. For in saying 'I believe...', flagging of a commitment and, at the same time, the committing to it. Note that if a person says 'I believe such-and-such' and it turns out that his reasons were inadequate, because of the performative element involved in his utterance, we can blame him afterwards. But it would not make sense to do so in the third person, reportative sense, as in: 'He believe, he is Macbeth', for praise or blame is inappropriate there.

Let us now turn from believe to infer. It seems to me that both are

5. Urmson, J.O., "Some Questions Concerning Validity", reprinted in Essays in Conceptual Analysis, ed. Anthony Flew, pp. 120-133. London: Macmillan, 1963.

closely similar in function. Consider 'I infer she is an alcoholic' and 'He inferred that she was an alcoholic'. Nobody is inferring anything in the latter case because it is reportative in function, and a report cannot be an inference. But in the former case the situation is different, for there a claim is being made in some sense. When I infer she is an alcoholic, I put myself in a position which exposes me to criticism. People can disagree with me about her being an alcoholic when they believe me to have been mistaken.

So far as I can make out, in the case of infer and its relatives there does not in point of fact seem to be any parenthetical shifting of the verb about the sentence. But to the extent that inferential verbs 'comment on' the content of the sentence in which they appear, i.e. in the first person (the inferential) use, they have a parenthetical function; but, as was the case with believe, their third person (the reportative) use does not have such a function. I suggest that the parenthetical function of inferential verbs helps to remind us of the functioning of such verbs: they stand apart, as it were, from the subject matter of the sentence; they operate on it.

In this functional sense, then, inferential verbs are parenthetical.

2.45 Is it a performative verb?

In order to get clear what 'performative' means, I turn to Austin's distinction between 'performative' and 'constative' (or 'declarative')

utterances.⁶ The distinction is simple enough. A constative utterance is one such as 'The cat is purring on the carpet', which can be true or false. A performative utterance, on the other hand, e.g. 'I pronounce you man and wife', cannot be either. Our concern is with performative and constative verbs pretty well exclusively, and in particular with infer and its cognates. Let us therefore apply this distinction more specifically.

Consider the following examples. 'I diagnose a cancer', 'I infer that he must have missed the train' and 'I calculate he must be in Byzantium by now'. Roughly speaking, all these verbs have the same function, and that function is performative in that it does not make sense to say of any of the examples above that they are true or false. These cases are to be contrasted with the following, all of which are constative and therefore susceptible of being true or false: 'The ceiling is full of dry rot', 'Jack is 3,000 miles away' and 'The gamekeeper is innocent'. Consequently, when a verb is performative we cannot say of it that it is true or false, but that it is rash, fair/unfair, justifiable/unjustifiable, and so on. Which particular epithets will be in order will turn on the sense of the verb in operation.

But, as Austin reminds us, there are various sorts of performatives. The question is to which group infer and its cognates belong. The following passage from Austin, it seems to me, solves our problem for us:

Verdictives consist in the delivery of a finding,

6. Austin, J.L., "Performative-Constative", reprinted in Philosophy and Ordinary Language, ed. C.E. Caton, pp. 22-33. Urbana: University of Illinois Press, 1963.

official or unofficial, upon evidence or reasons as to value or fact, so far as these are distinguishable.... Verdictives have obvious connexions with truth and falsity as regards soundness and unsoundness or fairness and unfairness. That the content of a verdictive is true or false is shown, for example, in a dispute over an umpire's calling 'Out', 'Three Strikes', or 'Four Balls'.⁷

I cite this passage because, interestingly, although Austin does not list infer among his verdictives, he does list one or two of its cognates, viz. take it, find and diagnose. It seems clear, therefore, that infer is a verdictive.

And if we were in any doubt, the list of criteria Austin provides in the ^{example} just quoted surely dispels it. For an inference is nothing if not consisting in the delivery of a finding upon evidence; it is either sound or unsound; it can be disputed; it purports to be correct or incorrect, justifiable or unjustifiable on the evidence; it commits us to certain future conduct, certainly to consistency; and by means of it we commit ourselves to a particular verdict or estimate.

It should be noted that verdictives are, of course, a special type of performatives; for simple performatives differ from them in not having to depend upon evidence. For instance, 'I pronounce you man and wife' said by the preacher during the course of the Marriage Service is a performative; and the marrying of the man and woman is a matter of saying the appropriate words in the appropriate situation, assuming all are acting in good faith, and so forth. But there is no question of citing evidence of any kind as a basis on

7. Austin, J.L., How to do things with words, ed. J.O. Urmson, p. 152. Oxford: The Clarendon Press, 1962.

which to say 'I pronounce you man and wife'.

Then infer in its first person use, at any rate, is a performative verb, but a performative of a particular sort, viz. one that must be based on reasons or evidence, but is nevertheless fully performative in the sense that to use the phrase 'I infer...' is to commit oneself to whatever follows it.

2.46 Is it an epistemic verb?

This section is speculative in a way in which the previous ones have not been. It is not that everybody is perfectly clear about the nature of epistemic as opposed to non-epistemic verbs. Rather is it that the species is, as it were, beginning to come into philosophical focus. The account which follows, although it owes a great deal to discussions with Professor Richard Bosley, must not be taken as 'final' in any sense: it is too speculative for that.

Let us start by simply listing a selection of epistemic verbs, on the one hand, and a list of non-epistemic verbs on the other:

Epistemic

knowing that q
believing that q
thinking that q
supposing that q
fearing that q
deducing that q
concluding that q

Non-Epistemic

being
singing
colouring
sitting
smoking
etc.

diagnosing that q

being under the impression that q

etc.

Glancing at this list, one notices immediately that the epistemic verbs are all followed by a 'that q' clause; as we shall see, they must be followed by one. But the non-epistemic verbs, as it were, have no place for one; that, too, is as it ought to be.

But first a few examples of each. Non-epistemic: 'I am six feet tall', 'She sang beautifully', 'They coloured her gold', and 'I have just taken a lethal dose of arsenic'. Epistemic: 'I feared that his legs would go from under him', 'They were under the impression that he was a ventriloquist' and 'It was, she supposed, a winged serpent'.

In other words, these two species of verbs behave very differently in sentences because they also function very differently. And it is quite impossible to use a non-epistemic verb with a 'that q' clause; just as it is impossible to use an epistemic verb without a 'that q' clause. Such a switch is unnatural because we just don't use verbs of the one type to do the job of those of the other: that is why they are different, after all. Let us now, concentrating solely on the epistemic type, list a few examples of these verbs at work:

'I know he killed his mother because he confessed his crime'

'She believes that the earth is square because she read it in a book'

'They feared that God would punish them on account of their sins'

'He concluded that the gamekeeper was innocent, because the squire had been seen stalking the butler'

The thing to notice about these perfectly straightforward examples is that they have in common a structural similarity. This linguistic feature they all share is of the following form: 'X epistemic verb q because p', in which formula the X must be a person, the 'p' and 'q' statements, and the 'p' is in the nature of a reason for the 'q'. In other words, it is as though the verb in a sentence so structured gets its meaning from the components of the rest of the sentence. It is as though the 'q' and 'p' come into the mind of the utterer of the sentence, and their joint significance, as it were, 'flows over' into knowledge, belief, fear or some other epistemic verbal moment. We can indeed draw up a rule to the following effect: In any sentence of the form 'X epistemic verb q', unless there is a 'p' which can be invoked in support of the 'q', then there is some defect in the sentence: it fails to do its job.

Epistemic verbs, then, can be said to be relative in a special sense to the constituents of the sentences in which they appear. That is why we shall expect to learn more about the nature of these epistemic verbs if we fix our attention not on the verb itself, but on the constituents of the sentence in which it does its proper job.

It is clear now, surely, that infer, as well as the inferential verbs generally, is an epistemic verb without qualification: its

structure is 'X infer q, on the basis of p' or 'X infer q, because of p'. But its structure is a topic we must pursue in Chapter Three. Let us now draw the threads of this section together.

2.47 Summary of the features of the verb Infer

The verbal properties of infer may be briefly summarised as follows:

It is a transitive verb, and it has no present continuous.

It is not an action verb; nor, except in a secondary sense, is it an achievement verb.

It is not a dispositional verb in its central use, though it can have a philosophically unimportant secondary dispositional use.

It has a parenthetical use, in the functional sense of 'parenthetical', but not naturally in the actual use of infer in sentences, but some of its cognates have such a natural use also.

It is a performative in its first person use, and it is a performative of a particular sort, viz. a verdictive, which is a performative which must be based on reasons or evidence.

It is, finally, an epistemic verb, i.e. one that gets its meaning--the justification for its use--from the nature and structure of the other components of the sentence in which it appears.

Finally, I shall note that these various features of infer no doubt interrelate with each other in ways significant enough for philosophers to look into more deeply. But such an enquiry is beyond our present purpose.

Section 2.5 General Summary

1. Inferences are drawn in a variety of ways, only sometimes is the actual verb infer used for this purpose. Its cognates, such as, deduce and conclude function in the same way; so, too, do various other more or less distant relatives of infer, for instance, maintain, hold, claim and believe--though it must be stressed that whether such verbs function inferentially is very much a matter of the context in which they appear.

There are, also, various linguistic devices--not verbs at all--such as, so, therefore and thus which have the force of infer. Finally, there are simple constative utterances which are inferential in virtue of their employment only, in which case the context in which they occur is responsible for making it clear that they have such a function.

2. It follows, therefore, that our account of infer shows that what is of basic importance to inference is its function, as opposed to the guise in which it appears. It follows, too, that we must not make the mistake of supposing there to be any one inferential verb which is basic, and from which all the others derive their meaning. Provided a verb functions in the inferential way, it is inferential, and that is all there is to it: infer itself, having such a function, is an inferential verb.

3. Our investigation has shown that because of the nature of infer we must concentrate on the first person singular form of it, this being the truly inferential form of it, i.e. the form of it in which inferring is going on.

4. Not to repeat the summary in sub-section 2.47, we might say that perhaps the most important verbal properties of infer are: it is not dispositional in its central use; it is not an achievement verb in its central use; it is parenthetical in function, if not in usage; and it is an epistemic verb, i.e. one that gets its meaning from the rest of the sentence in which it has a role to play; and it is a performative verb.

Finally, it must be pointed out that this whole enquiry so far has been pre-logical; and it will continue to be so throughout the thesis--at least until Chapter Six is finally reached, for there we shall have to compare our pre-logical inference with logical inference. Note, also, that this account just given is in no sense exhaustive, though I do believe it to be right in essentials. In the next chapter we turn to a discussion of the nature of the 'inference-formula', the material for which topic is derived from the findings of this chapter.

Chapter Three
The Inference-Formula

Section 3.1 The inference-formula

We are now in a position to state the linguistic form of inference, which is as follows:

'X(a person) infer(tense) that q, on the basis of p'

or, more specifically, since this is its basic form:

1. 'I infer q, on the basis of p'

Other versions of this form, which have been discussed in various places, are:

2. 'The inference is q, on the basis of p'

3. 'X(a person) inferred that q, on the basis of p'

4. 'X(a person) will infer that q, on the basis of p'

Case One is the paradigm of inference, Case Two being its indirect form. Case Three is reportative in function, and Case Four is predictive. We can, therefore, concentrate exclusively on Case One henceforth.

It is evident, however, that inferences are often drawn somewhat less explicitly than this formula might suggest. As often as not they are written or spoken in elliptical fashion, as in 'I infer q' or 'The inference is that q'. Nevertheless, in such cases the 'p' must be assumed, otherwise no inference can be involved.

It should be noted that the inference-formula 'I infer q, on the

basis of p' has been cast in its simplest form. In more complex inferences the number of p's will vary: they may be few, but they may be many. For the sake of simplicity we shall concentrate on the simplest possible form.

But what about inferences that take the following form: 'I infer q, despite p, but because of r'? Do they suggest that modification of the inference-formula is required? No, for when expressed more candidly they turn out to be the same thing after all. Take the following recasting, for instance:

'I infer q because of r, because (say) r is a very much better reason for inferring q than is p, which in fact I hold to be no reason at all for inferring q'

which reduces to:

'I infer q, on the basis of r'

In other words, inferences, like many other things, can be more or less complicated, more or less involved, more or less easy to unravel.

Let us now consider what I shall later* term the 'weaker' forms of inference, i.e. those cognates of 'infer' which are employed when inferences are drawn tentatively or uncertainly; such verbs are suppose, assume and suspect. The following examples illustrate typical uses of weak inference verbs:

'I suppose he is out, because it is most unlikely he should be at home and his hat not on the peg'

'Her blushing suggests she is probably embarrassed'

* Cf. section 3.4 on Strong and Weak inference

'It is most unlikely he should pass his examinations, for he has made no effort all year' (an example of the indirect form of an inference verb such as 'I doubt that...')

The question is whether these weaker inference-cognates in any way undermine the inference-formula. As a matter of fact, they do not: they serve, very conveniently, to underline it. Consider. In the first example the hesitancy involved in employing 'suppose', instead of 'infer', reflects itself in the appropriate way, viz. by the automatic insertion of a qualifying word or phrase, in this case 'most unlikely'. Similarly in the other two examples. What these examples bring out is that any weakening of the inference involves the automatic employment of words or phrases in appropriate parts of the sentence which reflect this weakening; and they have the function also of preserving the epistemological structure of the inference. For it has been argued earlier that 'infer' and its cognates are epistemic verbs, i.e. verbs that get their meaning from other words or phrases in the sentences in which they occur. Naturally, therefore, their meaning is relative to these words or phrases.

Once again we are reminded that the ideational content of the p's and q's in sentences bearing inferences is of prime importance: it is this ideational content which determines which inference verb is in order, as well as which qualifying words or phrases are appropriate to it. That, remember, is not something the inference-formula can determine for us in advance.

Now, having satisfied ourselves that the inference-formula is of the form 'I infer q on the basis of p', let us turn to a consideration

of the criteria in virtue of which a sentence is said to express an inference.

Section 3.2 The criteria of reasonableness of an inference

In this section I simply state the criteria in virtue of which an inference is said to be a reasonable inference--is said to be a legitimate inference, giving an account of them afterwards.

3.21 Primary criteria

1. One must commit oneself to the inference 'so q'.
2. The inference must have a conclusion, 'q'.
3. There must be a basis for the 'q', viz. 'p' (one or more).
4. The 'p' must be a reason for the 'q', even if the wrong reason.
5. The 'p' must be presumed true or probable independently of the 'q'.
6. The 'q' must be presumed true or probable relative to the 'p', for it is claimed to be true or probable on that basis. In inferences of the form 'I infer that if 'p', it will be 'q' it is readily apparent that whatever probability 'q' possesses will hinge on the probability of the 'p'.

These criteria, so far as I can determine, are the basic ones, though it could conceivably turn out that the list is not exhaustive. Sufficient that these six Primary criteria must all be satisfied if an inference is to be a reasonable inference, i.e. as opposed to an unreasonable or illegitimate inference; and for the following reasons.

No-one can be said to infer if he is not prepared to commit himself to the inference he puts forward (1). An inference must have a conclusion (2). There must be a basis for an inference (3). But it must be realised in this connexion that the 'p' can be rejected as the reason for the 'q', thereby demonstrating that the inference in question is not the appropriate one, not that it is not an inference; otherwise the distinction between the right inference and an inference of the right sort could not be sustained (4). Unless the 'p' is presumed true or probable, there is no inference (5). And, finally, since the truth or probability of supposing that 'q' is derived from that of the 'p', the 'q' has to be presumed true or probable relatively speaking (6).

These criteria apply to all inferences. Those that follow, the Secondary criteria, do not. We can safely assume, therefore, that unless any sentence purporting to carry an inference comes up to the standards set by these six specifications, it cannot be an inference. There are further criteria of reasonableness which a particular inference will have to satisfy, but these will vary from argument to argument. Before discussing these Secondary criteria, however, it should be emphasised in advance that there is no such thing as an inference which depends solely on these six Primary criteria. For if the notion of 'ideational content' has any significance, that could never be the case.

3.22 Secondary criteria

Assuming, then, that the Primary criteria apply to all inferences, and bearing in mind that in an inference 'I infer q, on the basis of

p', unless we know the ideational content of the 'p' we cannot even begin to consider the 'p' as the basis for the 'q'--it is clear that our next task must be to give an account of these further criteria, which we shall call Secondary criteria. They are not universal in the way the Primary criteria are, being applicable individually or in groups to various inferences or types of inferences, as the case may be. The Secondary criteria have a most important role to play in the evaluation of an inference.

Now the Primary criteria (called Primary in virtue of their universal character because they apply to all inferences) are by themselves useless to us unless applied in conjunction with the relevant Secondary criteria. For instance, to know 'I infer q, on the basis of p' is to know very little. But once the ideational content of the 'p' and the 'q' is known, the situation is quite different. One might fill in the ideational content of the inference in this way 'I infer Jack is ill, on the basis of his greenish pallor, depression and inability to eat'. In other words, once the ideational content of the 'p' and 'q' is known, we are in a position to invoke the Secondary criteria which are appropriate for an inference of this sort. In this case, though I shall not attempt to go into them here, the criteria will be those appropriate to ascribing illness to a person, and they will involve such things as symptoms, appearance, behaviour and so on. Or, to take another case, consider the inference 'I infer that this glass shattered on the basis of its being a brittle substance'. Here the properties of brittle substances will come into play to help provide the appropriate Secondary criteria. And so on with countless other inferences, for there are as many sets

of Secondary criteria as there are different types of inferences.

It is clear then that the task of listing these Secondary criteria is not for the philosopher, but rather for the expert in the field or discipline in question. We might just mention some of the areas in which different sets of Secondary criteria will play their part. They will vary from the theoretical to the practical fields; from the factual to the evaluative; they will organise themselves according to disciplinary subject matter, such as that of physics, physiology, psychology, medicine, philosophy, chemistry, economics, and so on, almost indefinitely.

Since these Secondary criteria are field-determined in the manner suggested, inevitably they must lie outside the scope of the inference-formula. But that this is so is in no sense to suggest that very often they won't be extremely well-established: the accumulated experience of years in a discipline such as physics, e.g., we shall expect to provide us with Secondary criteria of a very reliable sort. Our task as philosophers is to note the importance of the role and variety of Secondary criteria, and to sit in on the deliberations of the experts in other fields when problems arise in those fields, problems concerning the setting up of, or the rejection or modification of, such criteria.

Nothing I have suggested here indicates that fields won't overlap in various ways, or that fields won't have sets of criteria in common. The interrelationships between fields will be as complex as life itself.

3.23 Some conclusions about the inference-formula

We are now in a position to conclude with confidence that far from being in any sense arbitrary, the inference-formula 'I infer q on the basis of p' is fundamental to our very way of reasoning. This is how we infer: we cannot infer in any other way. To make use of a phrase of Wittgenstein's, we might say that inferences is a 'form of life'.

Inference is so basic to our thinking that indeed it cannot be justified further than in the way indicated in this thesis. It is itself the court of last appeal: beyond it no further justification is necessary, nor can it be provided. In a sense, inference is no more than the juxtaposition of the various ingredients of a particular sort of sentence (one which carries an inference): the inference gets its life from the ingredients of the sentences in which it occurs.

To question whether this is the right inference-formula, and no other one, is like once having been provided with a perfectly adequate explanation of a phenomenon and then asking, further, for its justification. Wittgenstein reminds us that explanations must have a stop, viz. at the point at which they satisfy us; and what he has to say about explanations applies equally well to inferences, and to the inference-formula:

'But then how does an explanation help us understand, if after all it is not the final one? In that case the explanation is never completed; so I still don't understand what he means, and never shall!'--As though an

explanation as it were hung in the air unless on another one that has been given, but none need stand in need of another--unless we require it to prevent a misunderstanding--one, that is, that would occur but for the explanation; not every one I can imagine.¹

Section 3.3 The basis 'p' and the conclusion 'q' of an inference

We must now turn to examining more closely the nature of the 'p' and the 'q' of an inference. Both have features in common, as well as features they do not share, with each other. In particular, the 'q' has a special relation of dependency on the 'p'. We must, therefore, be very clear about these different features if we are to understand more fully the implications of the nature of the inference-formula.

3.31 The nature of the basis, 'p'

The 'content' of the 'p' will be determined by the field in which it occurs. But ignoring what this content actually is, we can say some very general things about the 'p'. Clearly, the 'p' will be necessary, impossible, probable, likely or whatever. So that a range of what we shall term 'qualifiers' can be applied to it, as, for instance, in the following examples: 'necessarily p', 'probably p', 'it is impossible that p' and 'very likely p'. This range can be set out in outline in terms of the following pairs, which range strong-weak from the top to the bottom of the list, those in the left hand column being the positive correlates of those in the right hand column:

1. Wittgenstein, Ludwig, Philosophical Investigations, trans. G.E.M. Anscombe. Oxford: Basil Blackwell, 1953, pp. 40e-41e.

- | | |
|-----------------------------|-------------------------|
| 1. (a) 'necessary that p' | (b) 'impossible that p' |
| 2. (a) 'very likely that p' | (b) 'unlikely that p' |
| 3. (a) 'probably p' | (b) 'improbable that p' |
| 4. (a) 'possibly p' | (b) 'possibly not p' |
| 5. (a) 'conceivably p' | (b) 'conceivably not p' |

The strength of these qualifiers has an important part to play in the inference, since how we are to take the 'q' will turn on it. We must therefore keep it before our minds. Note, in passing, that I have not distinguished at all between logical or conceptual necessity and the necessity involved, say, in some well-established natural law, though I shall have something to say about this topic in the final chapter.

Again we must remember that the epistemological weighting (what may be termed the force of these qualifiers) of the 'p' is independent of the inference-pattern and, therefore, of the 'q'. For whatever qualifier is applied to the 'p', say, 'probably p', will be determined quite independently of the inference-formula.

3.32 The nature of the conclusion, 'q'

The content of the 'q', too, will be determined by the field in which it occurs; and it, too, will be susceptible to the application of qualifiers--as indeed it will have to be if it is to reflect the influence, the determining influence, the 'p' has on it in the inference-formula. I suggest, however, that the range of qualifiers applicable to the 'q' will turn out to be slightly different from those applicable to the 'p', and it will run something like this:

- | | |
|-------------------------------|--------------------------------|
| 1. (a) 'q' | (b) 'not-q' |
| 2. (a) 'probably q' | (b) 'probably not-q' |
| 3. (a) 'possibly q' | (b) 'possibly not-q' |
| 4. (a) 'conceivably q' | (b) 'conceivably not-q' |
| 5. (a) 'who knows whether q?' | (b) 'who knows whether not-q?' |

The reason for the automatic weakening of the 'p'-qualifiers, when they are applied to the 'q's is straightforward enough: as a matter of good sense we do not, in an inference, assert a 'q' more strongly than the 'p' on which it is based, or from which it is derived.

Consider an example. In 'I infer that Baby will possibly be sick, for by now he has probably eaten all the strawberries' it is a matter of common sense that 'possibly' is the qualifier modifying 'Baby will be sick', since it is not known that he has eaten all the strawberries, though it is presumed he has done--hence the 'probable' qualifying 'he has eaten all the strawberries'. In general, then, in an inference the qualifiers modifying the 'q' will be weaker than those modifying the 'p'; and maybe in some cases they will be of the same strength as they are. But they can never be stronger than they are.

It is also clear that whereas the epistemological weighting of the 'p' is independent of the formula, and of the 'q', the epistemological weighting of the 'q' cannot be independent of that of the 'p'. The epistemological weighting of the 'q' is a function of its relation to the 'p', from which it, so to speak, gets its very life. That, incidentally, is another reason why the epistemological weighting of the 'q' cannot be greater than that of the Sa.

3.33 The nature of the inference 'I infer q, because of p'

Finally, so far as the 'p' and 'q' of an inference are concerned, a point about their interrelation not covered so far. There are three basic patterns of the 'q because p' component of an inference. They may be characterised simply and explicitly as follows:

1. 'If this is a p, then that is a q' - the hypothetical inference
2. 'q because it is certain that p' - the necessary inference
3. 'Possibly q, because probably p' - the probable inference

In other words, there are three categories of inferences which it is best to keep clear of one another; and there will be various types within these categories, inevitably. But except for a criticism of F.J. Clendinnen's paper Two Types of Hypothetical Statements in Chapter Five, I propose to make nothing of this distinction here. Another way of making this distinction, in terms of the nature of the 'p', is this: the category to which an inference belongs will be determined by whether the 'p' is hypothetical, necessary or probable.

Section 3.4 Strong and Weak inference

To round off this discussion of the inference-formula, let us spend a little time considering the difference between two categories of inferences, viz. Strong inferences and Weak inferences. It will be recalled that in Chapter Two we discussed in detail the various sorts of inferential verbs--Strong ones, such as, 'deduce', 'conclude' and 'infer' itself; and Weak ones, such as, 'guess', 'suppose' and

'suspect'. The difference between Strong and Weak inference verbs is that the Strong type does not admit of the employment of qualifying words or phrases, whereas the Weak type virtually demands them. It is important, however, to bear in mind that what makes an inference verb Strong or Weak is solely a matter of its function: hence 'conclude', normally a strong verb can have a weak function, as in, 'I conclude that the cat must have eaten it, on the basis of Lucy's being pretty sure that she saw him in the pantry'.

In virtue of which characteristics can Strong and Weak inferences be picked out from each other generally? Quite simply. In terms of the general Primary criteria, in the following way:

Strong inferences will be restricted to the 'true' value of Primary criteria numbers 5 and 6; so far as the qualifiers of the 'p' are concerned, only number 1 will be in order; and, so far as the qualifiers of the 'q' are concerned, again only number 1 will be in order.

Weak inferences will be restricted to the 'probable' value of Primary criteria numbers 5 and 6; so far as the 'p' qualifiers are concerned, only numbers 2 to 5 will be in order; and, so far as the qualifiers of the 'q' are concerned, only numbers 2 to 5 will be in order.

What this means, in effect, is that Strong inference verbs will be very strong, i.e. will involve necessity, whether of the logical, conceptual or nomic-law sort; and Weak inference verbs will include the remainder, including those with very high probability.

Section 3.5 The rejection of an inference

In the light of the various conclusions drawn in this chapter so far, it is time to turn to the ways in which it is possible to reject an inference. But before doing so, let us consider, in turn, the notions of 'a reason', 'reasonable' and 'valid' so far as they apply to inference. Their importance will become clear as we proceed.

3.51 The notion of 'a reason'

If we are to understand the claim that the 'p' has to be a reason for the 'q' in an inference, obviously we must be clear about the notion of 'a reason'.

Now it is of the essence of 'a reason' that it be a reason for something or, alternatively, a reason against something. There is no such thing as a reason neither for nor against anything. Until a reason is given a 'direction' for or against something, it is not yet a reason. Also, it is clear that a reason cannot be a reason for and a reason against the same thing. For instance, the dog's not barking cannot be a reason for supposing both that Grandfather is out and that he is in.

Further, there is the distinction between a reason for such-and-such and the reason for such-and-such. The detective is after the reason for the robbery, not a reason for it: the assumption is that whereas there is only one of the former, there may be many of the latter.

3.52 The notion of 'reasonable'

A notion of fundamental importance to this thesis is that of 'reasonable'. It follows from our account of the inference-formula that any inference that satisfies the criteria listed earlier in this chapter will be a reasonable inference. 'Reasonable', therefore, will naturally be contrasted with 'unreasonable' or 'illegitimate'. Indeed we claimed that an inference satisfying the criteria was a reasonable inference, whereas an inference not satisfying them was illegitimate, or not an inference at all. But it may occur to the reader that surely this term is an arbitrary substitution for the term 'valid' as used by formal logicians. Now I want to insist that, far from arbitrary, 'reasonable' is the correct term here. For 'valid' is both a term of ordinary language and a technical term of logic; and in either case has a different function from that of 'reasonable'. But we must wait until sub-section 3.53 for a discussion of 'valid'.

The notion of 'reasonable' will become clearer if we note that an inference to be reasonable does not have to have a true conclusion. Consider an example. Someone says 'Father's boots are under the kitchen-table, so he must be at home'. Now even if it turns out, upon subsequent verification, that Father is not at home, it does not follow that the inference was an unreasonable one. It was perfectly reasonable, in that the evidence on which the inference was based was just the sort of evidence that one would go on in that sort of situation. Note, too, that inferences are to conclusions in the following senses: 'I suppose he is home', 'I think he

is home', 'I assume he is home', and NOT to 'He is home'. His being taken to be home is what is inferred, not his being at home. What this example brings out is that inferences are to thinking, supposing, concluding, inferring, etc. that such-and-such. They are not to such-and-such's being the case.

We shall have more to say about the relationship between 'reasonable' and 'valid' in the next sub-section. Let me conclude this sub-section with a general observation. An inference is from 'p' to 'q', assuming that 'p' is a reason, a good reason for 'q'; so that if 'p' is a good reason for 'q', what more reasonable than to claim that the inference is a reasonable inference? It is no accident that 'reason' and 'reasonable' go together in that way.

3.53 The notion of the 'validity' of an inference

We must now discuss the concept 'valid' insofar as determining its role in pre-logical inference is concerned. It is, as we have already argued, not involved in determining the legitimacy of an inference, for 'reasonable' is the term appropriate there. So it looks as if it must have a post-inferential function, in that it will be concerned with the verification of the conclusion of an inference. But it should be noted, too, that 'valid' is an ambiguous term because it has a technical usage in formal logic, as well as an ordinary language usage. As we shall see, it will be the ordinary language usage that will have a role to play in pre-logical inference.

Let us start with a quotation from Strawson which illustrates the

logical sense of 'valid':

Of a piece of deductive reasoning one can inquire: Is it valid or invalid? Do the premises entail the conclusion, or do they not? There are questions to which a 'Yes-or-No' answer is possible. If the sense of the argument is clear enough to admit of an answer it admits of a clear-cut answer: the argument is valid; or it is not....The phrase 'moderately valid argument' has no sense.²

The sort of valid argument Strawson has in mind is, for instance, the following: 'p and if p, then q; so q' or '(p implies q) so (not-q implies not-p)', i.e. inferences which are said to be valid in virtue of their form alone, inferences such that the denial of the conclusion involves the denial of one or both of the premisses. In such cases it would be logically inconsistent to reason counter to the inference stated. It seems clear that this is not the sort of validity appropriate to pre-logical inference, and it will soon be apparent why not.

Two minor remarks: (1) Note that just as there is no such thing as a moderately valid argument, so too there is no such thing as a moderately reasonable argument. In this respect both terms function similarly. (2) Note that Strawson makes use of the term of formal logic 'entail', a term which has no place in our account of inference, but which is intimately connected with the logical use of 'valid'.

Let us now turn to the Dictionary to see how it can help us. There we find that, among other things, it is used of arguments, assertions, etc., and that the following are a few of its equivalences:

2. Strawson, P.F., Introduction to Logical Theory. London: Methuen & Co. Ltd., 1952, p. 233.

well-founded and applicable; sound and to the point; against which no objection can be fairly brought. In other words, the ordinary usage of 'valid' is somewhat looser than the logical usage. Exactly what we should expect. In fact, it seems to include in it our sense of 'reasonable'. But we must keep the two concepts quite distinct in our minds: philosophically they ought not to be run together because of their different functions.

We are now clear as to the two uses of 'valid', the logical and the ordinary usages; we are also clear that 'valid' and 'reasonable' are not equivalents. Let us now, therefore, put this information to philosophical use.

Consider the following example. Lucy comes home and, seeing her Father's boots under the kitchen table, concludes he is at home. She infers 'Father is at home, because his boots are under the table'. Her inference is a reasonable (or a legitimate) one if her Father's usual practice is to take his boots off and leave them under the table when he comes home from the Mine. If he never did, the inference would be illegitimate, unreasonable or, straightforwardly, not an inference at all.

A little later, Lucy's mother, Myrtle, asks Lucy 'Is your Father home yet?' Lucy replies, 'Yes, his boots are under the table'. Her mother then says, 'See if he is in the cellar'. Lucy looks in the cellar and finds her father there having a snooze. What Lucy is doing, of course, is verifying her own inference from her Father's boots being under the table to his being at home. Only when

the verification is completed is the inference validated. Once Father has been found in the cellar, the inference is not only reasonable, but also valid.

Several things are now clear. Let us consider them in order.

1. It is clear that, logically speaking, an inference precedes its verification. I infer such-and-such at time t_a , and later, at time t_b , I check the inference I drew at time t_a . And that means, clearly, that some sort of ignorance is involved in drawing an inference at time t_a ; and one can only be certain one was right, or mistaken, at time t_b .

2. The inference drawn at time t_a is either reasonable or illegitimate: either it is an inference or it is not an inference, there being, as Strawson points out in the case for 'valid', no third possibility.

3. Hence, we must distinguish between (a) what can or cannot be an inference, and (b) inferring to a right or wrong conclusion. In the former case, either it is an inference or it is not; in the latter case, it remains an inference whether the conclusion is right or wrong.

4. The Primary and Secondary criteria, being criteria of reasonableness, all come into play at time t_a , since they are concerned with determining whether what is in question is an inference at all.

5. Since the verification of inference drawn at time t_a takes

place at time t_b , and it validates or invalidates the inference, it is clear that validity is a term explicated in terms of verification.

6. Inferring etc. is 'to taking it that q ' rather than to q 's being the case: it is to supposing, taking it that, concluding that ' q '; it is not to q 's being the case.

3.54 The rejection of an inference, in terms of reasonableness

In what ways is it possible to reject an inference? There are two main ones: (a) in terms of its reasonableness, and (b) in terms of its validity. In this sub-section we shall treat its rejection in terms of the inference's reasonableness, treating its rejection in terms of its validity in sub-section 3.55 immediately following.

So far as the inference's reasonableness is concerned, there are several ways, not all of which are successful. They include claiming the truth or falsity or the probability or improbability of the ' p ' or the ' q '; claiming that the ' p ' is not a reason for the ' q '; and claiming that the ' p ' is not the reason for the ' q '. I shall now consider these alternatives in turn (a) with respect to an instance of a Strong inference, and (b) with respect to an instance of a Weak inference. For the sake of simplicity, I propose to limit discussion to the true-false alternatives for the ' p ' and ' q ', excluding, therefore, the probable/improbable alternatives for the ' p ' and ' q '.

There are six possibilities, which are in order:

1. It may be claimed the 'p' is true and the 'q' is true.
2. It may be claimed the 'p' is true and the 'q' is false.
3. It may be claimed the 'p' is false and the 'q' is true.
4. It may be claimed the 'p' is false and the 'q' is false.
5. The 'p' may be claimed not to be a reason for supposing the 'q'.
6. The 'p' may be claimed not to be the reason for supposing the 'q'.

The assumption is, in all cases, that the inference is an inference in all other respects; i.e. Primary criteria 1, 2, 3 & 5 are satisfied.

(a) Strong inference

Let us take as our example the following: 'I infer it will conduct electricity because it is a metal'. The assumption is that all metals conduct electricity. 'p' = 'it is a metal'; 'q' = 'so it will conduct electricity'.

1. If it is a metal and it conducts electricity, then this is the case, surely, in which the inference not only cannot be rejected, but is in fact the one case in which the inference is supported in the correct way. The combined truth of the 'p' and 'q' could never undermine an inference.
2. If it is a metal and it does not conduct electricity, then in this case the inference stands, however unsatisfactory it may be so far as its validity is concerned.
3. If it is not a metal and it conducts electricity, then this is the case of 'the lucky guess', but the inference still stands.

4. If it is not a metal and it does not conduct electricity, then the inference is not undermined in any way.

Note here that the subjunctive form of the inference could be invoked in cases 3 and 4; it would take the form 'But if it were a metal, it would conduct electricity'.

5. Its being a metal may be claimed not to be A reason for supposing it will conduct electricity. If sustained, this claim would amount to saying there is no reason for counting the 'p' as a reason for the 'q'. It could not be an inference.

6. Its being a metal may be claimed not to be THE reason for supposing it will conduct electricity. Here, too, it would still be an inference, even if the claim were sustained and there were reason to suppose that the 'p' was not the reason for the 'q'.

(b) Weak inference

Let us take as our example the following: 'I assume that he is in because the dog is barking'. The assumptions made here are that he and his dog (a seeing-eye dog; the man is blind) are inseparable companions, and that when he goes out the dog goes out with him, therefore not barking when one knocks at the door. 'p' = 'the dog is barking'; 'q' = 'the assumption that he is in'.

1. If the dog is barking and he is in, this is the case in which the inference is supported in the correct way; the inference cannot be undermined by the truth of both 'p' and 'q'.

2. If the dog is barking and he is out, the inference stands, even if one has doubts about its validity.
3. If the dog is not barking and he is in, then this is the case of the 'lucky guess' but the inference stands.
4. If the dog is not barking and he is out, then the inference is not undermined in any way.

Note here that the subjunctive form of the inference could be invoked in cases 3 and 4; it would take the form 'But if he were in the dog would be barking'.

5. The dog's barking may be claimed not even to be A reason for assuming his being in. If sustained, this claim would amount to saying there is no reason for counting the 'p' as a reason for the 'q'. So it would not stand as an inference.

6. The dog's barking may be claimed not to be THE reason for assuming his being in. Here, too, it would still be an inference, even if the claim were sustained and there were reason to suppose the 'p' was not the reason for the 'q'.

In other words, whether an inference is Strong or Weak, provided it satisfies the criteria in virtue of which we label it an inference, there is only one way of rejecting it as an inference via the methods examined, viz. in case 5, where the 'p' is claimed not even to be a reason for the 'q'. That means there is only one way of rejecting it as an inference, it being understood that an illegitimate inference is not an inference at all. At time t_a , therefore,

there is one way and one way only of rejecting an inference.

3.55 The rejection of an inference, in terms of its 'validity'

I turn now to discussing the ways in which it is possible to reject an inference in terms of its validity. For the sake of simplicity, therefore, I shall deal rather more briefly with the examples of Strong and Weak inference discussed at length in the previous subsection (3.54), dwelling only on those cases which require comment.

(a) Strong inference

1. If both 'p' and 'q' are found to be the case, then this is the paradigm of a valid inference. There is no possibility of rejection here.
2. If the 'p' is true, and the 'q' false, the inference is invalidated outright, since a Strong inference must admit of no exception.
3. If the 'p' is false and the 'q' true, the inference is unaffected; for the subjunctive could be invoked here to 'save' the inference.
4. If the 'p' is false and the 'q' is false, the same applies here as in case 3.
5. If it is shown that the 'p' is not a reason for supposing the 'q', then the inference is invalidated.
6. If it is shown that the 'p' is not the reason for supposing the 'q', then the inference is invalidated.

In short, only in cases 2, 5 & 6 is the inference invalidated. But

it should be noted that though an invalid Strong inference, 3 could turn out to be a valid Weak inference; but that would be to downgrade it as an inference.

(b) Weak inference

1. If both 'p' and 'q' are found to be the case, then, as in the Strong case, this is the paradigm of a valid inference. There is no possibility of rejection here.

2. If the 'p' is true and the 'q' is false, the inference still stands, though it must be pointed out that if this were the case again and again with a Weak inference, one might have either to reject the inference as invalid or draw it in a much weaker form on another occasion; for instance, instead of saying 'The dog is barking, so I assume he is in' one might have to substitute 'The dog is barking, so it is just possible that he might be in'. But since a Weak inference admits of being falsified, we must not suppose that it can be invalidated merely because on such-and-such an occasion it did not work, though on various other occasions it did.

3. If the 'p' is false and the 'q' is true, the inference stands; for the subjunctive could be invoked here to 'save' the inference.

4. If the 'p' is false and the 'q' is false, the same applies as in case 3.

5. If it is shown that the 'p' is not a reason for supposing the

'q', then the inference is invalidated.

6. If it is shown that the 'p' is not the reason for supposing the 'q', then the inference is also invalidated.

In short, only in cases 5 and 6 is the inference rejected as invalid.

3.56 General conclusion: the rejection of an inference

We must now co-ordinate our findings in the previous two sub-sections, 3.54 and 3.55, viz. the ways in which an inference is rejected in terms of both its reasonableness and its validity.

An inference, whether Strong or Weak, can be rejected as not being an inference at all only in the case in which it is successfully claimed that the 'p' is not even a reason for the 'q'.

In the case of a Strong inference, the inference is rejected as invalid in the following cases: 2. when the 'p' is true and the 'q' is false; 5. when the 'p' is not a reason for supposing the 'q'; and 6. when the 'p' is not the reason for supposing the 'q'.

In the case of a Weak inference, the inference is rejected as invalid in the following cases: 5. when the 'p' is not a reason for supposing the 'q', and 6. when the 'p' is not the reason for supposing the 'q'.

The only difference between Strong and Weak inferences is that the latter, though never the former, can be valid when the 'p' is true and the 'q' is false. But that is as we should expect, for if it

were not the case, there would be no way of distinguishing between the two categories of inferences: there would not be two categories.

Section 3.6 Some remarks in conclusion

During the course of this chapter various things have become clear, among them the following:

We have demonstrated that the Primary and Secondary criteria taken in conjunction determine (a) whether an inference is an inference or not, and (b) whether an inference is valid or invalid. And although the Primary criteria are common to all inferences, and the Secondary are field-determined and therefore not universal in their application, nevertheless it is clear that both sets of criteria must come into operation when an inference is to be graded as reasonable (as opposed to not being an inference at all) or graded as valid (as opposed to invalid). But to determine whether an inference is an inference or not and whether it is invalid or not is to do two things, not one; and they are both quite separate activities.

We have considered the nature of the basis 'p' and the conclusion 'q' of an inference, as well as their interrelation 'p, so q'.

We have seen that there are two sorts of inferences: Strong and Weak, each different from the other in certain respects.

We have noted that the 'reasonableness' of an inference can be determined at time t_a , whilst the validity of an inference must be determined later, at time t_b , since the latter involves verification, though the former does not, and indeed cannot.

An important feature of 'valid' has emerged in the course of our discussion. It is that 'valid' is a term relative to the sort of context in which it appears: it is different in logic, for Strong inferences, and for Weak inferences. What this shows is not that there are three different senses of valid, but rather that whilst 'valid' has the same meaning throughout, the criteria of validity change from one type of inference to another, as mentioned above.

We are now, therefore, in a position to bring our conclusions to bear on the nature of the relationship between 'inference' and 'inference-licence'. But before doing so, in Chapter Five, we must first investigate the nature of 'inference-licence' in Chapter Four which follows.

Chapter Four

The Concept of Inference-Licence

Section 4.1 The nature of the p's and q's in an inference, i.e. in 'I infer q on the basis of p'

A precondition of any serious analysis of 'inference-licence' is an understanding of the nature of the components of an inference, viz. the 'p's' and 'q's' of our inference-formula, or, in Ryle's terminology, the nature of the premisses and conclusions of arguments. The account I propose to give of them here will of necessity be a perfunctory account, although it is important that it be given if this thesis is to be maintained. This section, therefore, has a dual purpose: to complete the work of Chapter Three, and to lead into a discussion of the nature of an inference-licence.

For the sake of simplicity, I propose to adhere closely to the account of the nature of the 'p's' and 'q's' of an inference given by Gilbert Ryle in his classical paper If, So & Because¹, especially because I believe it to be right in essentials, and, since I shall be discussing Ryle's general position later in the thesis, it is doubly desirable that we stick to Ryle's own account of what he is doing.

What is the nature of the 'p' and 'q' in any inference of the form 'I infer q on the basis of p'? It seems that they can be various things, such as, evidence, grounds, propositions, statements and judgments. But, so far as their appearance in an argument is concerned, they are simply sentences expressing statements. Some examples are: 'The gamekeeper was armed', 'She lied to the magis-

1. Ryle, G., "If, So, and Because", Philosophical Analysis, ed. Max Black. New York: Cornell University Press, 1950, pp. 323-40.

trate', 'It rained on Tuesday', 'He blushed', and so on. It is as though once we decide to employ some evidence, a judgment, a statement of fact, or whatever, as a premiss in an argument, we are no longer concerned about its origins, so to speak: all types of grounds, evidence, judgments, and so forth, assume the uniform of anonymity once they are pressed into service as the premisses or the conclusion of an argument. As stated earlier, this does not mean that they are all alike--otherwise why should they be called by different names?--but they are assumed to be alike for inferential or for argumentative purposes in virtue of their role in an inference or an argument.

Ryle, for instance, has this to say about them:

It is an important, if not the important, feature of our use of words like 'statement', 'proposition', and 'judgment', that any statement, proposition, or judgment can function as a premiss or conclusion in arguments. Suitability for what may be summarily called the 'premissory job' is one of the main things that make us reserve the title of 'statement' for some sentences in distinction from all the rest. Commands, reproaches, questions, laments, exhortations, and plaudits are not constructed for incorporation as they stand into arguments, either as premisses or conclusions. By a 'statement' we mean, at least inter alia, a sentence that is constructed for such incorporation.²

In this passage Ryle indicates what sorts of sentences are suitable, and what sort unsuitable, for the 'premissory job'. On the basis of this passage, therefore, it seems clear that our 'p's' and 'q's' must in fact be statements in this functional sense.

What are the criteria in virtue of which we call something a state-

2. Ibid., p. 235.

ment, we claim that it is capable of doing the premissory job? Ryle tells us.

By what criteria do we decide whether an expression is a statement or not? We cannot rest with the grammatical criterion that the verb is, the verbs are, in the indicative mood and that the sentence ends with a full stop and not a question mark....Usually we should call a sentence a 'statement' if by shifting its verb and replacing its full stop by a question mark a recognisable question resulted. 'All men are mortal' is a statement, for 'Are all men mortal?' is a question....Next, when a person makes a statement to the effect that something is the case, it is always or usually appropriate to ask whether he knows, believes, or supposes that it is the case; we can ask him whether he is lying or mistaken and so question the truth of what he has told us; we can contradict him; we can consider the evidence for and against what he has said; and we can thank him for the information he has given us.

Ryle's account, though doubtless rudimentary, seems to me to be essentially sound; so I propose to take it for granted on commonsensical grounds. Sufficient that we know what sorts of things count as 'statements'--if you like, 'premisses' or 'conclusions' of arguments. We are now in a position to turn to the question of the nature and function of the inference-licence.

Section 4.2 The Rylean account of inference-licence

It is fitting that we should begin our examination of the concept of inference-licence via consideration of the views of Professor Gilbert Ryle for, after all, it is said that he fathered the concept onto us. Let us therefore get the concept into perspective by means of consideration of what Ryle himself has to say on the subject.

Now we must not expect any ready-made definition of 'inference-licence' from Ryle in his article If, So, and Because because, so far as I can make out, there just isn't one. But there are various passages in this paper which, taken in conjunction, provide us with the material out of which to fashion one for ourselves. The fact that there is no ready-made definition to hand is not accidental, since it is no easy task to provide a definition of a concept that is as yet unclear or confused. As we shall soon see, the concept of inference-licence is a somewhat confused one, though one would not suspect it from a reading of If, So and Because.

Ryle's account of 'inference-licence' commences with a consideration of the hypothetical statement 'If today is Monday, tomorrow is Tuesday'. He writes:

The validity of the argument (i.e. Today is Monday, so tomorrow is Tuesday) requires the truth of the hypothetical and to concede the truth of the hypothetical statement is to concede the argument. This already shows part of the point of making hypothetical statements. But just how does the validity of the argument⁴ require the truth of the hypothetical statement?
(bracketed interpolation mine)

Unfortunately, Ryle's example of a hypothetical statement, 'If today is Monday, tomorrow is Tuesday', is a poor one, in that it is rule-bound in the way, say, chess or the propositional calculus is rule-bound: it could be argued that in neither case is any 'real' inference involved. (Cf. Ch.6) And the concept of 'valid' is by no means as clear as one would wish, as was indicated in Section 3.53 of the thesis.

4. Ibid., p. 326.

But let us not quibble at this stage, instead allowing Ryle to speak for himself unhampered via the following passages. We shall reserve criticism of these passages until later.

A hypothetical statement can function in the premissory way and in the conclusion way, which an argument cannot do. It can also with a change of style be contradicted or questioned.⁵

The principle of an inference cannot be one of its premisses or part of its premiss. Conclusions are drawn from premisses in accordance with principles, not from premisses that embody those principles. Rules of evidence do not have to be testified to by the witness.⁶

The argument 'Today is Monday, so tomorrow is Tuesday' is an application of 'if today is Monday, tomorrow is Tuesday'; and it is in this notion of application that lies the answer to our question 'How does a valid argument require the truth of the corresponding hypothetical statement?'⁷

If we ask what is the point of learning 'if p, then q', or what is the evidence that someone has learned it, part of the answer would be a reference to the learner's ability and readiness to infer from 'p' to 'q' and from 'not-q' to 'not-p'; to acquiesce in the corresponding arguments of others, to reject affiliated invalid arguments, and so on. But we should also expect him on certain, perhaps rare, occasions to tell his hearers or readers 'if p, then q'. He would be expected to be able and ready to make the hypothetical statement when someone else required it to be taught, when he himself was under challenge⁸ to justify his inference operations, and so on.

Thus, making a hypothetical statement is sometimes giving an inference precept; and the first object of giving this precept is that the recipient shall make appropriate inferences.⁹

5. Ibid., p. 327.

6. Ibid., p. 328.

7. Ibid., p. 328.

8. Ibid., p. 329.

9. Ibid., p. 329.

Knowing 'if p, then q' is, then, rather like being in possession of a railway ticket....A person can have an inference warrant without ever actually making any inferences and even without ever acquiring the premisses from which to make them.¹⁰

As travel warrants can be invalid in various ways, so 'if-then' statements can be false.¹¹

It must be realised that asserting 'if p, then q' is not making a report of any inference or a comment on any inference. Nor is it recommending, exhorting, confessing, requesting or commanding anything. It is not talking about inferring any more than showing up a ticket or transferring a ticket is talking about a railway journey.¹²

In saying 'q, because p', we are not just asserting but using what is expressed by 'if p, then q'; we are putting it to work or applying it; we are attaching 'q' to 'p' in accordance with the licence conveyed by 'if p, then q'. For the question 'Why "q"?' is the question 'From what premiss is "q" legitimately drawn?'; and the answer to this question has to give not just the true premiss 'p', but, ¹³therewith, the title to infer from 'p' to 'q'.

The inference 'p, so q' does not embody 'if p, then q' as a component of its premiss, but rather applies it in being an operation with 'p' and 'q' executed in conformity with it....¹⁴

When I learn 'if p, then q', I am learning that I am authorised to argue 'p, so q', provided that I get my premiss 'p'. But the hypothetical statement does not tell me 'p', any more than getting a ticket puts me on the train....In saying 'if p, then q', I am not stating 'p' or 'q' or in any way committing myself to the truth of 'p' or 'q'; I am stating or asserting something, but I am not stating

-
10. Ibid., p. 329.
11. Ibid., p. 330.
12. Ibid., p. 330.
13. Ibid., p. 331.
14. Ibid., p. 331.

or asserting them. Neither the statement 'p' nor the statement 'q' enters into the statement 'if p, then q'. Yet, especially when so encoded, the hypothetical statement does very much look like a statement incorporating the two component statements 'p' and 'q'... The coding must be highly misleading. I am going to argue for just this conclusion.¹⁵

After clearly indicating his intentions at the end of the previous quoted passage, Ryle finally goes on to discuss the subjunctive form of hypothetical statements, and, among other things, has this to say about them:

The statementlike appearance of the clauses of those 'if-then' statements which are not subjunctively worded is a deceptive appearance and one which always can be and often is obviated in stylistically different paraphrases. But if so, the logicians' code style (which I have myself been using) 'if p, then q' is deceptive. For the letters 'p' and 'q' as they occur here look and sound just like the 'p' and 'q' that occur in conjunctive statements, inferences and explanations. But if the clauses of the hypothetical statements are not statements, then logicians ought not to flag them so.¹⁶

It is because hypothetical statements embody statement specifications, that an inference from one statement to another can be described as being 'in accordance with' or being 'an application of' the hypothetical. The premiss fills the protasis bill, the conclusion fills the apodosis bill. They 'fulfill the conditions'.¹⁷

I have quoted Ryle at some length in order to convince the reader of just what Ryle is claiming, for, later in this chapter, we must follow up the implications of Ryle's views in some detail. Hence

15. Ibid., p. 334.

16. Ibid., p. 335.

17. Ibid., p. 336.

it is prudent to be sufficiently attentive to the details of his position on inference-licence which are here so conveniently provided. Let us now pause to consider the picture of inference-licence with which Ryle provides us. Roughly speaking, it is as follows:

1. Inference-licences have the form 'if p, then q'; they are, in Ryle's own words, 'hypothetical statements'.
2. The validity of the argument 'p, so q' requires the truth of the hypothetical statement, and vice versa.
3. Hypotheticals are statements¹⁸ and therefore are True or False; but they cannot function as premisses or conclusions of arguments.
4. Ryle claims that hypothetical statements and explanations are both statements, whilst arguments are not.
5. Hypothetical statements can be contradicted, admittedly with a little doctoring.
6. 'P, so q' is an application of 'if p, then q'.
7. If challenged to justify one's inference, one must be able and ready to make the corresponding hypothetical statement.
8. A hypothetical statement is a precept ensuring that the learner of it makes appropriate inferences.

18. Note that philosophers are by no means unanimously agreed that hypotheticals are statements. Ryle, for instance, holds that they are (but of a peculiar kind), whilst Professor Dray holds that they are not; cf. Dray, W.H., "Professor Ryle on Arguments and Inference-Licences", Mind, LXIII, 1954, pp. 384-87. My own view is that the argument of this thesis is independent of whichever way the issue may ultimately be decided.

9. Knowing 'if p, then q' is like being in possession of a ticket; whether, as a matter of fact, the ticket is ever used or not.

10. When we infer 'q' on the basis of 'p', we attach the p and q in accordance with the licence conveyed in 'if p, then q'; it is a title to infer.

11. I state or assert something in stating 'if p, then q', but not either the p or the q.

12. Ryle concludes that the p's and q's of hypothetical statements are not the p's and q's of arguments and explanations; and he claims they ought to be distinguished from them.

With these conclusions at our disposal, we are now able to address ourselves to the task of developing Ryle's account of hypothetical statement or inference-licence (I shall use these terms interchangeably from henceforth), bringing out certain features of an inference-licence which Ryle either ignores or does not treat in sufficient depth. But I should point out here that I am largely in agreement with the Rylean position and, therefore, regard the remainder of this chapter as an amplification of, rather than attack upon, Ryle.

But before concluding this section, is it possible at this point to give some sort of a rough-and-ready definition of what Ryle means by an inference-licence? Yes, I think it is; but, as we shall see, the definition is peculiarly vague. It is this:

An inference-licence is a title, of the form 'if p,

then q', to infer q because p in an argument of the form 'p, so q'; without such title, no argument can be valid. It is a statement, but because of its function it cannot occupy the role of either premiss or conclusion in an argument; the argument applies it, just as the inferrer reasons correctly by means of it.

We must keep this 'definition' in mind; then, when we develop the Rylean account of inference-licence, we must take another, better-informed look at it, lest there should be need to modify it in any way--for we shall have to explain such modifications rather carefully.

Section 4.3 Development of the Rylean Account

In this section I make several minor criticisms of Ryle's thesis on inference-licence, in order to clear the way for a more detailed exposition of the nature and function of an inference-licence. In this connexion it will be important to discuss the various components of an inference, as a means to getting the concept of inference-licence into rather sharper focus than Ryle has it.

4.31 Are hypotheticals statements?

The reader may be puzzled, as indeed the writer of this thesis was initially, as to how Ryle can consistently claim that the 'p' and 'q' of an argument 'p, so q' are statements, on the ground that among other things they do the 'premissory job', and yet, later,

claim also that an inference-licence 'if p, then q' is a statement even though it cannot occupy the role of premiss in an argument; and, even further, claiming that the 'p' and 'q' of the inference-licence are not statements at all, and indeed ought not to be flagged as such!

On the surface, it looks as though he is in the unenviable position of the philosopher out to save his thesis at whatever the cost. Surely either the p's and q's are statements all the time, or they are not? Surely it cannot be the case that now p's and q's are statements, now hypotheticals 'if p, then q'? Ryle cannot be right.

But whilst it is legitimate for us to have worries about whether the p's and q's are on all fours with 'if p, then q's--whether perhaps they ought to be classed separately as, for example, statement₁ and statement₂, respectively--it would be a mistake to judge statementhood on the basis of appearance, even if 'p' does not resemble 'if p, then q'. The resolution of our doubts on this topic will turn on considering clauses and sentences in terms of their function, not their visual appearance, in which case the puzzle will be seen to resolve itself.

The argumentation of the remainder of this section will bear out these few remarks here.

4.32 An ill-chosen example of an inference-licence

Before considering briefly a simple example of a case in which an inference-licence would typically be invoked, let me point out that the example with which Ryle begins his discussion, 'If today is

Monday, tomorrow is Tuesday', far from being a good one is in fact a particularly unfortunate one. For its validity is a matter of the conventional employment of the names of the days of the week and the rules of their cyclic ordering, i.e. M, T, W, Th, F, S, Sun; M, T, W, Th, and so on. The only occasion on which it would be appropriate to say 'If today is Monday, tomorrow is Tuesday' is in the situation in which someone--say, a foreigner unfamiliar with the language, or a child learning it--is ignorant of the rules concerning the cyclic ordering of the names of the days of the week. But to do this is not so much a matter of inferring as a providing someone with a rule, or reminding him of that which he had forgotten. And that is at best inferring in a peripheral sense, if inferring at all. For if someone knows 'It is Tuesday tomorrow because it is Monday today', he knows too that 'If it is Monday today, it is Tuesday tomorrow'. Ryle's mistake here--though happily it does not undermine his thesis--is that he selects as his example one that might well have been lifted straight out of a logic textbook, when he ought to have chosen instead an example of an everyday sort.

By contrast, let us now consider such an everyday example. A glass falls from the table, shattering into fragments. Someone says 'The glass broke because it was brittle'. Someone else asks 'Why do you say that?' The reply is 'If anything is brittle it will shatter when dropped'. If I did not know that this was a characteristic of brittle things, I shall have been provided with the appropriate inference-licence. Otherwise, I shall have been simply reminded of what I ought to have known in any case; of what I had forgotten.

What now of the further question that might be posed at this point, viz. 'But why should a thing's being brittle cause it to shatter into fragments when dropped?' The natural place for a question of this sort is after the inference-licence has been invoked, as it has been in this case. What is being requested is the justification for the inference (and a fortiori for the inference-licence). And if it cannot be justified it must be rejected; for if the only reason I can give for claiming 'p, so q' is that 'if p, then q', then I have no right in suggesting the inference-licence 'if p, then q' at all. The point is that simply to recast an inference 'p, so q' into hypothetical form 'if p, then q' does nothing whatever towards justifying that inference. What justifies the inference also justifies the hypothetical: what justifies 'It was glass, so it shattered' also justifies 'If anything is glass, it will shatter'.

What has emerged from this minor investigation is that an inference-licence, though it licenses an inference rightly enough, does not justify it as well; for if that were the case we should have to allow, impossibly, that inference-licences licensed themselves. But we shall have more to say on the subject of the justification of inferences and of inference-licences in the sub-section (4.34).

4.33 The forms an inference-licence may take

It will not come as a surprise, after our discussion of the functional nature of 'inference', that 'inference-licence', too, has to be understood in terms of its function. Let me clarify that remark by means of our previous example of a simple inference, viz. 'The

glass broke because it was brittle'. The appropriate response to the question 'Why do you say that?' is to invoke the inference-licence 'If anything is brittle, it will break when dropped'.

But, alternatively, there are at least two other things one could do instead of stating 'if p, then q'. One might say 'All p's are q's', thereby 'granting the license' using a different form of words from the more usual 'if p, then q'; or one might say 'The Wykeham Professor of Physics at Oxford says so', thereby invoking the word of an authority as the inference licence. And I dare say there are other alternative ways of licensing an inference than via the hypothetical statement. What we have to remember is that inference-licences don't have to look alike, provided that they function alike!

Now, before going any further, let me make one thing very clear: I am assuming in this sub-section that there is a distinction (to be discussed later) between the statement of the inference-licence 'if p, then q' and the granting of the licence; it is the latter that does not require to be spoken or written in the hypothetical statement form, and it is the latter I have been talking about. The statement of the inference-licence is another matter. But it seems to me to be no accident that Ryle appears not to have noticed the dual nature of the innocent looking form of words 'if p, then q', which does two things simultaneously, (a) licenses the inference from p to q, and (b) states what it is licensing.

It is interesting to note here that in logic, expressions of the form 'if p, then q' are taken to be equivalent to those of the form

'All p's are q's'. But such is not the case outside logic. For since a hypothetical is not the same as a universal statement, they must be distinguished from each other. For, indeed, we are led to believe on occasion that the universal statement is our justification, maybe our sole justification, for asserting the hypothetical. For instance, once it was thought that all swans were white, that if anything was a swan it would be white. Why? No-one knew, except that on a counting of heads it was known there was a 1:1 correlation. In that sort of case the 'All p's are q's' is the justification for 'if p, then q', assuming, of course, no other information is at hand or likely to be found, and so on.

Since the point I am making is both a subtle and an important one, let me put it in another way: there is no one form of inference-licence--for its function alone tells us whether it is licensing or not, not its verbal apparel--and it sometimes takes the hypothetical statement form, sometimes the universal statement form, and sometimes the word-of-an-authority form. But it is not a hypothetical statement, not a universal statement, and not the word-of-an-authority. These, and any other alternatives there may be, may function as inference-licences; but they may, and often do, not. This distinction between the statemental and the licensing functions of a hypothetical statement is further discussed in section 4.36.

4.34 The 'statement of' versus the 'justification of' an inference-licence

The justification of an inference 'p, so q' is not a question of formally recasting it in hypothetical form, as 'if p, then q'. For

the justification of an inference-licence is also the justification of the inference. The justification of an inference-licence, as of an inference, lies outside it.

However, I suggest that a possible exception to this rule, viz. that the justification of an inference or inference-licence must lie outside it, is when the inference in question, 'p, so q', belongs to a formal logical system, such as the propositional or sentential calculus. For in that case what I have earlier called the 'ideational content' of the p's and q's is irrelevant, so that indeed the only possible way of linking up the 'p' and the 'q' of the inference is via the hypothetical 'if p, then q'. But that is a topic we must leave until Chapter Six.

An example will illustrate the distinction. Take the inference-licence 'If it is glass, it will shatter when dropped'. The justification of the licence (and of the inferences governed by it) is a matter of such factors as, the experience of others with glass objects, the physical structure of glass, glass's similarity to other brittle substances, and so on. Clearly, then, the statement of the inference-licence and its justification are logically distinct and must be kept apart.

It is in virtue of a satisfactory--at least, a putatively satisfactory--justification that an inference-licence is put forward. It is part of the 'logic' of inference-licences that they must be justifiable, whether successfully or otherwise. We grant the licence to the argument if and only if it is properly justified--at least, that is what we ought to do, even if in practice we are not always

so careful.

In our day to day business we constantly invoke inference-licences, often without any clear idea of their justification. This is as one would expect: justifications, as explanations, must have a stop somewhere. So, one can invoke an inference licence without ever knowing its justification; but if one does know the justification for a particular inference, one also has the inference-licence at one's disposal, as it were--given, of course, one is sufficiently intelligent to realise the nature of what one has at one's disposal. The justification of 'if p, then q' will turn out to be a question of providing an explanation of why it should be supposed that 'q' on the basis of 'p'; but, in general, this will not be the job of the philosopher but of the expert in the field to which the 'p's' and 'q's' belong.

It is well to note here that what justifies an argument, an explanation or a hypothetical justifies all of them. In the inference pattern 'I infer q on the basis of p' what justifies the 'q' is the 'p' if anything justifies it. That is why it cannot be right to claim that the hypothetical has logical priority over the inference. The concepts of argument, hypothetical and explanation are like the trio in Ethics, 'ought', 'right' and 'duty', where, too, it makes no sense to assign a logical priority to one rather than the other two. Was Ryle, I wonder, after the point that the justification logically precedes the inference? But in that case it precedes the hypothetical also.

The statement of the inference-licence tells us what it is it

licenses, as, for instance, in 'If you drink this, you will die', where the implication is that 'The contents of the bottle are poisonous', say. The justification of the inference, on the other hand, involves an account of why it should be supposed that the contents of the bottle are poisonous or, if you like, an explanation of the contents and their properties. The justification appears nowhere in the inference-licence.

Consequently, the concepts of inference-licence, 'if p, then q' and of the justification of the inference are logically distinct.

4.35 The character of the verb 'to license (an inference)'

Most of what has been argued in connexion with 'infer' in Section 2.4 of the thesis applies also in the case of the verb 'license'. For instance, the form of words used is unimportant, whereas the function, on the other hand, is all-important (the actual verb 'license' need never appear in the licensing); the future tense of 'license' is predictive, the past tense is reportative, and the present tense--the licensing tense--is the important, the central tense. For the same sorts of reasons given for 'infer', the important use of 'license' is confined to the first person singular, as in, 'I license you to ...'. License is a transitive verb, and it has no present continuous. It is not an action verb or an achievement verb; and, so far as I can make out it has no natural parenthetical use. But, unlike 'infer', it does not appear to be an epistemic verb, i.e. one that gets its meaning from the ingredients of the sentence in which it is used correctly.

For reasons of economy, I do not propose to discuss these various properties of the verb 'license', since what has been discussed at length in connexion with 'infer' applies mutatis mutandis to it also.

4.36 The 'commitment-recommendation' versus the 'statemental' sense of inference-licence

When someone proffers an inference-licence, i.e. when he asserts 'if p, then q' as a licence for 'p, so q', he does two things, not just one: he states what it is he is committing himself to and he commits himself to it as well.

We have already, it will be recalled, discussed the important distinction between the statement of the licence and the justification of the licence. But here we come to the third important aspect of an inference-licence, viz. its performative aspect.

For this reason, it might be better if there were an alternative way of phrasing an inference-licensing, so that it would be clear that (a) the licenser was committing himself, and (b) what it was he was committing himself to. But it appears that we shall have to continue employing the uncandid, because ambiguous, 'if p, then q' form of it.

Whichever way it is phrased, however, there is no question but an inference-licence does have this dual function. Asserting 'if p, then q' or 'I license you to infer q from p' is, from the performative point of view (as opposed to the statemental), a committing of

the licenser to the reliability of the licence, with the implication that others would be wise to commit themselves to it, too--it both recommends the object of the licence and commits the licenser to it. So that if one asserts 'I license you to infer from q to p' and he is wrong, we are entitled to round on him; so, too, the committing of oneself to the inference implies a justification for the licence, it does not specify it.

It is clear, then, that the formula 'if p, then q' is ambiguous because of its dual-functioning. So far as I can be sure, Ryle does not draw this distinction, though his general line of argument implies it: he labels 'if p, then q' as a statement, though at the same time he allows that it cannot perform the premissory job which is the prerogative of statements.

4.37 In conclusion

On the basis of our findings in this section we are now in a position to list the criteria in virtue of which any hypothetical statement may be said to be an inference-licence:

1. It is statemental, in that it specifies what it licenses.
2. It is performative, in that it involves committing oneself to it, and recommending it to others.
3. It implies a justification for itself, a justification which of necessity lies beyond it.

Consider, by way of contrast, the case in which a licence is granted to someone in the legal sense. In the legal case we have the

following attributes:

1. The specification of what is being licensed.
2. The official licensing--say, the signature at the bottom of the statement of what is being licensed, together with the seal.
3. The implicit justification of it (the law of the land relevant to the granting of the licence; this may even be cited).
4. The granting of the licence by one so authorised.

The two cases are largely similar, except that the inference-licence case is the more rational, in that the justification of 3. has to be a rational justification, whereas the legal equivalent need not be (though it may be); and anyone is authorised to grant the inference-licence, provided only that his justification be sound, whereas in the legal case unauthorised people can grant licences, and authorised ones can grant them on unsound justificational bases.

It is interesting to note that only people can license other people. For a licensing is like the handing over of a responsibility, a right; and that is something that only people can hand over to other people.

A corollary is that things cannot license anything. In that case, it may be objected, how then does our account of inference-licence square with that given in logic? All I can say here is that, ultimately, either logic is committed to subscribing to this account or, and this is important, what passes for inference in logic turns out, upon investigation, to be something quite different.

But that topic we must postpone until Chapter Six.

Finally, let us cast our minds back to the 'definition' of inference-licence which I put together towards the close of Section 4.2. In the light of our findings since then, are any modifications necessary to this 'definition'? I suggest that none is necessary, for the upshot of our investigations has been to underpin Ryle's account of inference-licence. The difference between us is that we have gone into a rather more detailed discussion of the nature of the concept: we have brought the concept into sharper focus.

Section 4.4 The rejection of an inference-licence

We must now discuss the ways in which an inference-licence may be rejected, in a similar fashion to the way in which we discussed how an inference may be rejected. As before, we shall have to consider its 'reasonableness' and its 'validity'; and we shall have to distinguish between Strong and Weak inference-licences. But, because of our findings in the case of inference, we shall be able to do so relatively briefly.

4.41 The rejection of a licence, in terms of its 'reasonableness'

Strong inference-licences & Weak inference-licences

We shall refuse to call anything an inference-licence unless it satisfies the three criteria listed at the head of sub-section 4.37, unless, i.e., 1. it is statemental, 2. it is performative in the requisite way, and 3. it implies a justification beyond itself. Unless all of these criteria are satisfied, therefore, the candi-

date being investigated cannot be an inference-licence at all.

4.42 The rejection of a licence, in terms of its 'validity'

(a) Strong inference-licences

Benefitting from our previous discussion of the validity of Strong inferences (cf. sub-section 3.55a), we can state that a Strong inference is invalidated when any of the following are the case:

1. The 'p' is true and the 'q' is false.
2. It is shown that the 'p' is not a reason for the 'q'.
3. It is shown that the 'p' is not the reason for the 'q'.

(b) Weak inference-licences

Similarly with Weak inference-licences (cf. sub-section 3.55b), we can state that a Weak inference-licence is invalidated when either of the following is the case:

1. It is shown that the 'p' is not a reason for the 'q'.
2. It is shown that the 'p' is not the reason for the 'q'.

The only difference therefore in the validation of Strong and Weak inference-licences is that the former is invalidated when the 'p' is true and the 'q' is false, whereas the latter is not.

It is understood that the reasonableness of an inference-licence can be determined at time t_a , whereas the validity of the licence, since it depends upon verification, can only be determined later, at time t_b .

4.5 General conclusion

There are three aspects to an inference-licence: its statemental aspect, its performative aspect, and its justificational aspect.

A hypothetical statement of the form 'if p, then q' is an inference-licence if, and only if, it satisfies all of the following three criteria:

1. It is statemental, in that it specifies what it licenses.
2. It is performative, in that it involves committing oneself to what it specifies and recommending it to others.
3. It implies a justification for itself, a justification which of necessity lies beyond it.

A Strong inference-licence is a valid inference-licence, provided none of the following is the case:

1. The 'p' is true and the 'q' is false.
2. It is shown that the 'p' is not a reason for the 'q'.
3. It is shown that the 'p' is not the reason for the 'q'.

A Weak inference-licence is a valid inference-licence, provided none of the following is the case:

1. It is shown that the 'p' is not a reason for the 'q'.
2. It is shown that the 'p' is not the reason for the 'q'.

We are now ready to bring together our findings on the nature of both an inference and an inference-licence, and we shall consider them in Chapter Five.

Chapter Five

The Relationship between Inference and Inference-Licence

Section 5.1 Inference and Inference-Licence

The results of our findings in Chapter Three, on the inference-formula, and in Chapter Four, on the inference-licence, may now be brought together. So that we may readily grasp the relationship between the concepts of inference and inference-licence, therefore, instead of tediously summarising the results of these two chapters, I propose to cut short the recapitulation involved by the simple expedient of considering only those features of either concept in virtue of which we assess a putative inference or inference-licence as being an inference or inference-licence, and those features of either concept in virtue of which we assess an inference or inference-licence as an invalid inference or inference-licence. The results of our findings we shall then summarise in sub-section 5.2, before passing on to consider several views, not all of which are favourable to our thesis, in sub-section 5.3. Finally, we shall draw together the findings of the whole of the chapter in sub-section 5.4.

5.11 The rejection of both Strong and Weak inferences

We shall always allow that an apparent inference is really an inference except in the case in which, for either Strong or Weak inference, the 'p' is successfully claimed not to be a reason for the 'q'.

5.12 The rejection of both Strong and Weak inference-licences

We shall always allow that an apparent inference-licence is really an inference-licence except in the cases in which, for either Strong or Weak inference-licences, it is successfully claimed that any one of the following is the case:

1. The hypothetical 'if p, then q' is not statemental in the required sense.
2. The hypothetical is not performative, in that it does not both commit one to the licence-specification and recommend it to others.
3. The inference-licence is not justifiable in the required sense.

5.13 The invalidation of a Strong inference

We shall always allow that a Strong inference is a valid inference except in the following cases:

1. When the 'p' is true and the 'q' is false.
2. When the 'p' is not a reason for the 'q'.
3. When the 'p' is not the reason for the 'q'.

5.14 The invalidation of a Weak inference

We shall always allow that a Weak inference is a valid inference except in the following cases:

1. When the 'p' is not a reason for the 'q'.
2. When the 'p' is not the reason for the 'q'.

5.15 The invalidation of a Strong inference-licence

We shall always allow that a Strong inference-licence is a valid inference-licence except in the following cases:

1. When the 'p' is true and the 'q' is false.
2. When the 'p' is not a reason for the 'q'.
3. When the 'p' is not the reason for the 'q'.

5.16 The invalidation of a Weak inference-licence

We shall always allow that a Weak inference-licence is a valid inference-licence except in the following cases:

1. When the 'p' is not a reason for the 'q'.
2. When the 'p' is not the reason for the 'q'.

Section 5.2 Summary of the Relationship between Inference & Inference-Licence

It is clear that the rejection of an inference is a different sort of thing from the rejection of an inference-licence, whether Strong or Weak. We say that an apparent inference is not an inference at all when the 'p' is not a reason for the 'q'; but we reject the corresponding inference-licence, of either the Strong or the Weak sort, if it is non-statemental or it is non-performative or if it is not justifiable. The reason for this difference is that inferring is not licensing, though they are at the same time intimately interrelated. When, in rejecting an inference, we claim the 'p' is

not a reason for the 'q', this is equivalent to charging that the corresponding inference-licence is non-statemental or not performative or not justifiable (the alternation, incidentally, is not exclusive); alternatively, when we reject an inference-licence, this is equivalent to charging that the 'p' of the inference is not a reason for the 'q'. Minimal reflection will show that this must be so.

The validation of an inference or an inference-licence is more straightforward, in that the relationship between the two is much more obvious. Though Strong inferences and inference-licences have a slightly different relationship from that between Weak inferences and inference-licences, they have in common the characteristic that what invalidates the inference, in each case, also invalidates the inference-licence.

Strong inferences and inference-licences are invalidated when the 'p' and 'q' of the 'if p, then q' are, respectively, true and false; when the 'p' is not a reason for the 'q'; and when the 'p' is not the reason for the 'q'. (Note that 'the reason' is included in 'a reason').

Weak inferences and inference-licences are invalidated when the 'p' is not a reason for the 'q'; and when the 'p' is not the reason for the 'q'.

The only difference, it will have been noted, between the validation criteria of Strong and Weak inferences and inference-licences is that in the case of the Weak the fact that the 'p' may be true

and the 'q' false does not invalidate the inference or the inference-licence. But, given our account of the nature of a Weak inference and its inference-licence, that, surely, is how it must be. Were this not the case, there would be only one type of inference and inference-licence, viz. the Strong.

There is little doubt that there is a great deal more to be written on the subject of the nature of a Weak inference and its relation to its Weak inference-licence. Sufficient for our present purpose, however, that we be clear about the differences between Strong and Weak inferences and inference-licences; sufficient that we understand how they differ and why this must be so.

Now, at last, we are in a position to see why it can make no sense to claim that the inference-licence justifies the inference. For what justifies the inference also justifies the inference-licence. And it follows, therefore, too, that inferences imply inference-licences, just as inference-licences imply inferences. It may well be that in logic it does make sense to claim that the inference-licence, the hypothetical, justifies the inference; but, if so, either what is termed 'justify' in logic ought to be called by another name, or such justification is not possible (cf. Chapter Six).

I shall now term the pre-logical inference we have been discussing throughout this thesis 'epistemic' inference, and contrast it with logical inference in Chapter Six. The term 'epistemic' is, I take it, particularly appropriate since our whole enquiry has been epistemological in character, and we have demonstrated in Chapter Two that 'infer' is an epistemic verb.

Section 5.3 Discussion of Several Views

Let us now discuss the views of several philosophers who have written on topics relevant to this thesis.

5.31 'Ad hoc' hypotheticals versus 'variable' hypotheticals

Mr. F.J. Clendinnen in his article Two Types of Hypothetical Statements¹ claims, interestingly, that:

Given an argument 'p, so q' there is one concrete hypothetical which corresponds to it uniquely, namely 'if p then q'. We will call the hypothetical standing in such a relation to an argument the ad hoc hypothetical of the argument.²

An example of such an ad hoc hypothetical--the one he gives--would be 'If Jones has passed his examinations, his appointment is certain'; and of the argument it governs, 'Jones has passed his examination, so his appointment is certain'. This ad hoc hypothetical is to be distinguished from variable hypotheticals which take the general form 'If anything is a p, then it is a q'; and the argument corresponding to the variable hypothetical is of the usual form, viz. 'p, so q', as indeed it is also in the case of the ad hoc hypothetical.

Among other things, Clendinnen claims:

The ad hoc hypothetical "if this is an A then it is a B" tells us only that the argument is valid. It gives us no information about why the argument is valid, be-

-
1. Clendinnen, F.J., "Two Types of Hypothetical Statements", Mind, LXXI, No. 281, 1962, pp. 46-52.
 2. Ibid., p. 46.

cause it does not tell us what pattern of the facts is responsible for the validity of the argument. The variable hypothetical, on the other hand, does tell us why the argument is valid, because it asserts, implicitly, that there is a specific factual pattern and it is this pattern which makes the argument valid.³

Now I want to take Clendinnen to task here, for if our account of the relationship between inference and inference-licence is sound, it follows that there can be no such thing as an ad hoc hypothetical. That is not to claim that for any inference of the form 'p, so q' it is not possible to conjure up an ad hoc hypothetical to correspond to it. It is possible in every case. It is to claim, however, that Clendinnen's ad hoc hypothetical is nothing other than our hypothetical inference. Let me illustrate what I mean by means of an example. 'If it were a fortnight hence, I should feel much happier', though it has the appearance of inference-licence, is merely a hypothetical inference. Similarly with Clendinnen's example above: 'If Jones has passed his examinations, his appointment is certain'.

Consequently, for Clendinnen to claim that the ad hoc hypothetical tells us that the argument it governs is valid, though it does not specify why, is to claim nothing more than that the hypothetical inference (which is all it is) tells us that it is itself valid, though without telling us why it is valid. But this is absurd, for inferences, whether hypothetical or otherwise, don't tell us anything about themselves, whether they are valid or otherwise; and

3. Ibid., pp. 48-49.

certainly, as Clendinnen notes, they cannot specify why they are valid. If I am right, therefore, the term 'ad hoc hypothetical' serves no useful purpose, and ought to be dropped from the philosophical vocabulary.

Nor is Clendinnen right in supposing that variable hypothetical tells us why the argument it governs is valid because it asserts implicitly that there is a specific factual pattern and it is this pattern which makes the argument valid. For we have argued that what makes an argument valid is its satisfaction of the Primary and Secondary criteria, and nothing to do with any 'specific factual pattern'. Neither will it do, except perhaps in the case of formal logic, to claim that a variable hypothetical tells us why an argument is valid, for, surely, the validity of an inference, as of an inference-licence, lies beyond it. At best it could be claimed that the fact that the inference-licence is a valid one makes it certain that the inference which is true to it is valid also. But that is quite a different, and an innocuous, claim.

5.32 The compatibility of 'p, so q' and 'not-q'

In her paper Reasons and Reasoning⁴, Mrs. Judith Thomson has one or two things to say which tie in very well with our account of Weak inference. Where we claimed that the assertion of 'p, so q' in the case in which it turns out that 'q' is false is legitimate, Mrs. Thomson puts the point in the following ways:

In general, where p does not imply q, the truth of the conjunction of p and 'p is a reason for q' is

4. Thomson, J.J., "Reasons and Reasoning", Philosophy in America, ed. Max Black. London: Allen & Unwin, 1965, pp. 282-303.

compatible with its turning out all the same to be an accident that q... . So there is surely a good sense of 'accident' in which if you know that p and that p is a reason for q, and therefore say 'so q', it may well be an accident if you are right. But this is equally surely no good ground for denying that you were reasoning. For your premisses do at least rule out that it must be an accident if q-- they rule out that it would at best be a lucky guess if you were right.⁵

In general, a claim to the effect that there is reason for thinking something so, or for thinking an event will take place, is not falsified by its not being so, its not taking place. And so also there can be a reason for thinking that something is so, and equally good reason for thinking that it is not so.⁶

To have conclusive evidence for something is not, I think, to have a logically conclusive reason for it.⁷

Everything Mrs. Thomson claims in these passages fits in with our account of inference in general and, in particular, with our account of Weak inference. For it is possible only in the case of Weak inference for the 'p, so q' and the 'not-q' to be compatible; indeed it is the mark of a Weak inference that it has this accommodating property. But, as Mrs. Thomson makes clear, in the case in which 'p implies q' (the logical case), it cannot be that 'not-q'. Why this is so we must discuss in Chapter Six.

Note the force of Mrs. Thomson's remark: 'To have conclusive evidence for something is not to have a logically conclusive reason for it'. It is that logically conclusive reasons are not necessary for an inference to be a valid inference. Indeed I would go further and claim that logically conclusive reasons cannot have such a

5. Ibid., pp. 299-300.

6. Ibid., p. 295.

7. Ibid., p. 282.

function in an inference. Our inference-formula demonstrates perfectly clearly that this must be the case. Again, we must consider logically conclusive inferences by contrast with epistemic inferences in Chapter Six.

5.33 An account of inference and inference-licence

Mr. J. Woods in a recent article⁸ provides us with a succinct account of the relationship between an inference and its licence, an account with which I agree, on the whole. Nevertheless it is susceptible of misunderstanding, in that in part it appears to be in conflict with our general thesis. I quote Woods' article at length, reserving comment on it until afterwards.

It is always either illegitimate or useless to re-write a principle of inference as a premiss in an argument which invokes it. Philosophers have recognised this, but without, I suspect, fully appreciating the reason why. It may be defensible to say that a rule of inference is not a statement, and hence cannot occur as a premiss in any argument, premisses always being statements and never rules. But it is not plausible to deny that an inference rule can be rewritten in appropriate statemental form: if 'from p to infer q' is a valid inference rule, we can always say that p entails q. The former may not be a statement, but the latter surely is; the former perhaps cannot be a premiss in an argument, but the latter surely can. If one rejects as invalid an inference, p \therefore q, one cannot possibly 'save it' by adding to its premisses the statement that p N q'. For in declaring the inference to have been valid, one has implicitly denied the truth of the p N q, and hence one contradicts oneself in the very next breath by including it among the premisses. And if we were justified in including it among the premisses, we should have been wrong in refusing the validity

8. Woods, J., "Was Achilles' Heel Achilles' Heel?", Analysis, XXV, No. 4, 1965, pp. 142-47.

9. Note that 'p N q' in the passage quoted above is to be read as 'p entails q'.

of the argument in its unaugmented form.

This is not to say that the addition to the premisses of an argument of the rewritten rules of inference involved by it is of itself inconsistent. On the contrary, if one says that $p \therefore q$ one can never consistently reject $(p \cdot (p \supset q) \therefore q)$.¹⁰

It seems to me that it is unimportant whether one talks of rules of inference (inference-licences) of the form 'if p, then q' or whether, instead, one prefers the equivalent statemental form 'p entails q'. But so far as this thesis is concerned, surely, Woods has not done any more than provide us with an alternative formulation for the inference-licence, since 'p entails q' has that very function. And even if we were to adopt 'p entails q' in place of 'if p, then q', we should have to take into account the fact that 'inference' is a concept rather wider than in the formal logical sense. And we should have to prefer 'p implies q' in the case of Weak inferences--something which Woods does not take into account (it is not his purpose, after all). And even substituting 'implies' for 'entails' we should have to be careful to make it plain that we were not using 'implies' in any formal logical sense, if only because our new sense of 'implies' will have to allow for the compatibility of 'p, so q' and 'not-q', which the 'implies' of formal logic does not do.

Again, with respect to Weak inference, Woods cannot be right in maintaining that "if one says that $p \therefore q$ one can never consistently reject $(p \cdot (p \supset q) \therefore q)$ ", provided, of course, that we read the \supset as 'implies' in the sense appropriate to 'Weak' inference mentioned a few lines back. For Woods makes the unwarranted

10. Ibid., p. 144.

assumption that all inference is logical inference. But what he argues is, of course, correct so far as Strong inference is concerned; but that we would never want to dispute.

Section 5.4 General Conclusion

We have reached the stage at which our whole thesis has been argued. All that remains is for us to apply it, in order to clarify the differences that appear to exist between our epistemic inference and logical inference. Throughout the thesis we have expressed doubts as to whether logical inference is the same sort of thing as epistemic inference, and indeed we have hinted that either it is not (in which case, presumably, it may turn out to be a form of calculation) or that it is a sub-species of epistemic inference. Whichever--if either--it turns out to be we must now investigate in the final chapter of our thesis, viz. Chapter Six.

Chapter Six

Epistemic versus Formal Logical Inference

Section 6.1 Introduction

Since it is often claimed by logicians that the notion of inference can be explicated in terms of a formal system of logic such as the sentential or propositional calculus, i.e., the claim is that the axioms and theorems of the system represent the 'valid' inference-patterns, the question is, of course, whether indeed this is the case.

The question to be discussed in this chapter, therefore, is whether a standard formal system of logic restricted to the sentential level (since negative results at this level will hold a fortiori for subsequent systems, e.g. to predicate logic) can explicate the notion of what we have termed 'epistemic' ^{inference} ~~logic~~; and if not that, perhaps the notion of what nevertheless deserves to be called 'formal' inference; and if not that either, then what formal logic is about--whether, say, 'calculation'.

For such purposes it should be necessary to introduce only enough of a formal system to indicate the way in which such a system would develop, and how it is supposed to set forth the valid patterns of inference.

Section 6.2 The rudiments of the sentential calculus

What follows is a schematically set out account of the structure of the propositional or sentential calculus.

Notation The notation to be used will be the following:

1. Let the small letters of English be used to stand for 'propositions': $p, q, r \dots$
2. Let the symbols '*' and '&' be connectives between the propositions p and q , as in: ' $p * q$ ' and ' $p \& q$ '; and the symbol '-' be an operator upon the proposition p , as in: ' $\neg p$ '.
3. Let the two brackets '(' and ')' enclose a compound proposition.

Formation Rules of the System

1. Any proposition ' p ' is a well formed formula (wff).
2. If ' p ' is a wff, ' $\neg p$ ' is too.
3. If ' p ' and ' q ' are wff, ' $(p * q)$ ' and ' $(p \& q)$ ' are too.

Note: a formula is any finite string of symbols formed in accordance with the notation introduced above; a wff is any formula formed in accordance with the formation rules.

Axioms Let the following wff be taken as axioms:

- A1. $(p * (q * p))$
A2. $(p * (q * r)) * ((p * q) * (p * r))$
A3. $((p * \neg q) * (q * \neg p))$

Rules of Inference

- R1 If p is asserted and if $(p * q)$ is asserted, infer q .

R2 If A and B are wff, and if they are alike except in that wherever p occurs in A, q occurs in B, then if A is asserted infer B.

A Proof in the system is a finite sequence of wff (numbered consecutively 1 ... n), given that each is either an axiom or is inferred from an earlier step by means of a rule of inference.

Such a system will have two characteristics, viz. those of being Complete and Consistent, each axiom being independent of the others.

We have now at our disposal the necessary equipment to enable us to derive new formulae (proofs) at will. But since our purpose in setting up the system is merely to indicate the way in which it operates, we shall not attempt to derive any new formulae. Instead, we shall concentrate our attention on Rule of Inference R1 and on the instantiation of it, viz. $((p \ \& \ (p \ * \ q)) \ * \ q)$. But more of the latter formula after a word or two about a 'truth' Table.

Since the p , q , r ... of the sentential calculus are taken to be 'propositions' (i.e. are just like the p's and q's of our epistemic inference), it will follow that they can have either of two values: they can be either true or false. For instance, if p = 'The cat is on the mat', then '-p' = 'It is not the case that the cat is on the mat'. We can tabulate these 'truth-values' of the p , q , r ... etc. in the following self-explanatory way:

<u>p</u>	<u>q</u>	<u>(p & q)</u>	<u>(p * q)</u>	<u>((p & (p * q)) * q)</u>			
t	t	t	t	t t	t	T	t
t	f	f	f	t f	f	T	f
f	t	f	t	f f	t	T	t
f	f	f	t	f f	t	T	f
				1 3	2	5	4

In this way we can see at a glance that the truth-values of (p & q) are t,f,f,f; of (p * q) are t,f,t,t; and of ((p & (p * q)) * q) are t,t,t,t.

Note that the numbers under the right-hand formula above indicate the order in which the truth-values of the components of the formula are worked out, step by step; the capitals in column 5 indicate the truth-value of the whole formula, which, in this case, is T throughout.

A formula whose truth-values are 'true' throughout is called a 'tautology'. And a wff A is a theorem of the system if like ((p & (p * q)) * q) it is a tautology. A tautology is true under all interpretations, i.e. whatever the truth-values of the components of it, i.e., the p , q , r ... etc.

Our question now is whether the inference-pattern ((p & (p * q)) * q) is a pattern of epistemic inference. But before discussing this question we must turn aside for a moment to discuss a preliminary distinction, viz. that between a rule of inference and its instantiation.

Section 6.3 A rule of inference and its instantiation

Let us consider as our rule of inference R1 above, and its instantiation $((p \ \& \ (p \ * \ q)) \ * \ q)$. But the relationship between R1 and its instantiation is not as we would expect from our account of the 'parallel' distinction between an inference 'so q' and its inference-licence 'if p, then q'. Instead of the R1 licensing the formula, as indeed the 'if p, then q' licenses the inference 'so q', we find the relationship quite different. It can be expressed in this way: R1 tells us, qua rule of the sentential calculus, that if we have $(p \ \& \ (p \ * \ q))$ we are entitled to write, instead, $((p \ \& \ (p \ * \ q)) \ * \ q)$; or, alternatively, if we have $((p \ \& \ (p \ * \ q)) \ * \ q)$ we are entitled to write, instead, q. In other words, the relation between a rule of inference of formal logic and its instantiation is rather different from that between an epistemic inference-licence and the inference it governs. For there is a sense in which the rule of inference does not govern the instantiation of it. The rule of inference is, as it were, a rule of high (complete) generality, in that it can be applied to any formula of the appropriate structure; whereas our account of an inference-licence shows that it cannot have such a property and still be an inference-licence. Besides, R1 is such that the truth-value of the p, i.e. $(p \ \& \ (p \ * \ q))$ is of no importance whatever, since it functions as a p whatever its truth-value. This could never be the case though with an inference-licence, 'if p, then q'.

Already, then, we are beginning to sense the different natures of epistemic inference and formal logical inference. We must now return

to the question as to whether the inference-pattern $((p \ \& \ (p \ * \ q)) \ * \ q)$ is a pattern of epistemic inference. A further question we must ask in due course is whether R1 is a rule of epistemic-inference, though the negative answer to that question has been indicated already; but we must look into it further in section 6.5.

Section 6.4 Is $((p \ \& \ (p \ * \ q)) \ * \ q)$ a pattern of epistemic inference?

Our inference-formula, it will be recalled, had the following form: 'I infer q because of p', i.e. it is equivalent to 'p, so q' so far as the relationship between the p and the q of the inference is concerned. In other words, we infer 'so q' on the basis of 'p'. How does this parallel the inference-pattern $((p \ \& \ (p \ * \ q)) \ * \)$ of formal logic? In the following way, I suggest: the p = ' $(p \ \& \ (p \ * \ q))$ ' and the q = q (i.e. is the same).

We must now recall the criteria in virtue of which an epistemic inference can be called an inference at all. They are as follows:

1. Primary criteria

1. One must commit oneself to the inference 'so q'.
2. The inference must have a conclusion, 'q'.
3. There must be a basis for the 'q', viz. the 'p'.
4. The 'p' must be a reason for the 'q', even if the wrong reason.
5. The 'p' must be presumed true (or probable) independently of the 'q'.
6. The 'q' must be presumed true (or probable) relative

to the 'p', for it is claimed to be true (or probable) solely on that basis.

2. Secondary criteria

These we remember cannot be legislated about: they are many and varied and are different from one argument, or argument type, to another.

Henceforth I shall assume that the comparison between epistemic and formal logical inference will involve only 'true' values of the p's and q's, since, as was the case with Strong inference, the 'probable' alternative of Primary criteria 5 and 6 above does not apply.

A remark about Secondary criteria so far as formal logical inference is concerned. It seems to me to be mistakenly supposed that there are no Secondary criteria for such inferences. What I want to claim is this: to the extent that formal inference is epistemic inference, it must involve Secondary criteria. And if it be argued that, in that case, the criteria are the same for all formal inferences, and that that is ridiculous, then I must insist that it is indeed ridiculous, even if that is the way it must be. I should remark here that the fact that either there are no Secondary criteria for formal inference (the logician's view) or that there are and that they are overlooked because they are the same for all formal inferences does not augur well for the defenders of formal inference. For whichever is the case, it comes into immediate conflict with the account we have given of the notion of 'a reason' (cf. 3.51).

6.41 Is $((p \ \& \ (p \ * \ q)) \ * \ q)$ a reasonable inference?

We must now apply the Primary criteria to the inference-pattern $((p \ \& \ (p \ * \ q)) \ * \ q)$ to see whether it is a pattern of epistemic inference. Criterion 1 is satisfied, but only to the extent (if at all) there can be any commitment involved. Similarly with 2. With 3. the $(p \ \& \ (p \ * \ q))$ can be regarded as a basis for the q (in virtue of rule of inference R1). But 4. it is not at all clear that $(p \ \& \ (p \ * \ q))$ is a reason for the q , because, surely, given the nature of the sentential calculus, this won't do, if only because, for example, the p in ' $p \ * \ -p$ ' cannot be a reason for the $-p$. For we have argued that a reason cannot be a reason for its contradictory. So in this case there is something unnatural about claiming $(p \ \& \ (p \ * \ q))$ is a reason for q : it is neither a reason nor not a reason, one might say, but something other than a reason. Criterion 5 is satisfied. But 6. it cannot be the case that the q is presumed true relative to the p , for it is clear, given the nature of the sentential calculus, the p and the q are quite independent of each other.

In short, since we argued earlier that a putative inference was an epistemic inference if and only if all of the Primary criteria were satisfied, it follows that the formal inference-pattern $((p \ \& \ (p \ * \ q)) \ * \ q)$ cannot be a pattern of epistemic inference.

6.42 Is $((p \ \& \ (p \ * \ q)) \ * \ q)$ a valid inference?

The answer to this question is quite straightforward: since it is not an epistemic inference at all, it certainly cannot be a valid

one. But a word or two about 'validity' so far as formal logical inference is concerned. Since validity involves verification, and since verification is not only out of place in formal logical inference-patterns but cannot operate on them at all, it is clear that formulae such as $((p \ \& \ (p \ * \ q)) \ * \ q)$ could never be valid in the sense we have discussed in 3.53 earlier in the thesis. But there is the formal logical sense of valid which is a term ascribable only to formulae which are tautologies; in other words, is a term used to indicate that the rules of the system, etc. are fully subscribed to in a particular case. But is this not like a rule of chess, in which case we feel no compulsion to compare it to epistemic inference at all?

Section 6.5 Is R1 "If p is asserted and if (p * q) is asserted, infer q" an epistemic inference-licence?

For the sake of simplicity, since already we know the answer to this question, let us consider R1 in terms of the features of an inference-licence of epistemic inference in virtue of which we reject a putative licence as a licence at all. We reject it as a licence when:

1. The hypothetical 'if p, then q' is not a statement.
2. The hypothetical is not a performative, in that it does not commit one to the licence specification and it does not recommend it to others.
3. The inference-licence is not justifiable in the requisite sense.

What then of R1? Insofar as 'if p, then q' is equivalent to ' $p \ * \ q$ '

(and it is questionable that they are equivalent) number 1 is satisfied. Probably number 2 is satisfied. But number 3 is not satisfied.

Consequently we must reject R1 as an inference-licence of epistemic-inference. Note, too, that in 6.3 we argued against the possibility of R1's being the same sort of thing as an inference-licence of epistemic inference.

Again, as was the case with the inference-pattern $((p \ \& \ (p \ * \ q)) \ * \ q)$, since R1 is not even a licence, it certainly cannot be a valid licence. But let us consider why not very briefly. The criteria of rejection of an epistemic inference-licence are:

1. p is true and q is false.
2. p is not a reason for q .
3. p is not the reason for q .

Now since R1 must be rejected on account of criteria 2 and 3, it cannot be a valid inference-pattern in epistemic inference.

Section 6.6 Conclusion

We may now state categorically two things: (a) that R1 could not be an epistemic inference-licence, and (b) that $((p \ \& \ (p \ * \ q)) \ * \ q)$ could not be a pattern of epistemic inference.

Consequently, in answer to the question posed in the opening paragraphs of 6.1, we must reply that a standard formal system of logic cannot explicate the notion of what we have termed 'epistemic' logic; nor, if we are to retain the usual meaning of 'inference', can it

explicate the notion of 'formal' inference (except in a certain negative sense to be discussed a little later). And what this means, I suggest, is simply this, viz. the inference of a formal logical system in the end turns out to be nothing other than a function of the structure and rules of the system. In other words, it is nothing other than calculation. But this is not the place to explore the notion of formal logical inference as calculation.

Finally, a word or two about the negative sense of 'formal' inference I referred to earlier. It seems that we must allow a certain relationship between epistemic inference and formal logical inference. It is that what formal logical inference-patterns show us is what we cannot infer: they are thoroughly negative in function in that they keep us from going astray in our thinking. It is at that point it meets up with epistemic inference, and, if I am not mistaken, only at that point.

Chapter Seven

Conclusion

In this thesis we have demonstrated conclusively that there is only one form of inference, viz. pre-logical or epistemic inference, and that any other form of inference there may be must be a derivative of it.

But we did not find that the inference of a formal logical system was derivative in this way, for our investigations showed that, except for the negative norm-setting function of it, it was not inference in any serious sense at all; and we suggested, no more, that such logical inference is, strictly speaking, not so much a type of inference as a type of calculation.

There was, however, one point of contact between epistemic inference, on the one hand, and logical inference, on the other.

Logical inference-patterns are useful to us in that they rule out inferences which are outright illegitimate. But apart from that function, they are of no help to us in drawing inferences. No doubt that is why J.S. Mill writes about the subject in the following way:

Logic is the common judge and arbiter of all particular investigations. It does not undertake to find evidence but to determine whether it has been found. Logic neither observes, nor invents, nor discovers; but judges.¹

An implication of this thesis is that all inference is deductive

1. Mill, J.S., A System of Logic. London: Longmans Green, 1952, p. 5.

in character, as I recall Professor Ryle's once claiming in a lecture on Thinking. We can now see why. If epistemic inference is the only inference worthy of the name, then it is deductive in the way 'I infer q on the basis of p' is deductive. Hence it may be that the inductive/deductive dichotomy is in need of revaluation--not because it is wrong, but perhaps because it would be better to think along different, more constructive lines in the future.

In conclusion, I should like to suggest that our epistemic inference is very likely what John Stuart Mill was seeking, viz. his 'real' inference. For we have argued that our epistemic inference is 'real' if any inference is. Maybe Mill's attempt to set up an empirical logic and his charge that formal logic is artificial indicate that this was the sort of conclusion he was feeling towards.

Bibliography

Austin, J.L., How to do things with words, ed. J.O. Urmson.
Oxford: The Clarendon Press, 1962.

_____, "Performative-Constative", reprinted in Philosophy and Ordinary Language, ed. C.E. Caton. Urbana: University of Illinois Press, 1963.

Clendinnen, F.J., "Two Types of Hypothetical Statements", Mind, LXXI, 1962.

Dray, W.H., "Professor Ryle on Arguments and Inference-Licences", Mind, LXIII, 1954.

Keene, G.B., Language and Reasoning. London: Van Nostrand, 1961.

Mill, J.S., A System of Logic. London: Longmans Green, 1952.

Ryle, G., "If, So, and Because", Philosophical Analysis, ed. Max Black. New York: Cornell University Press, 1950.

_____, The Concept of Mind (Hutchinson's University Library).
London: Hutchinson House, 1955.

Strawson, P.F., Introduction to Logical Theory. London: Methuen & Co. Ltd., 1952.

The Shorter Oxford English Dictionary, Third Edition Revised with Addenda, revised and edited by C.T. Onions. Oxford: The Clarendon Press, 1956.

Thomson, J.J., "Reasons and Reasoning", Philosophy in America, ed. Max Black. London: Allen & Unwin, 1965.

Urmson, J.O., "Some Questions Concerning Validity", reprinted in Essays in Conceptual Analysis, ed. Anthony Flew. London: Macmillan, 1963.

Wittgenstein, L., Philosophical Investigations, trans. G.E.M. Anscombe. Oxford: Basil Blackwell, 1953.

Woods, J., "Was Achilles' Heel Achilles' Heel?", Analysis, XXV, 1965.

B29840